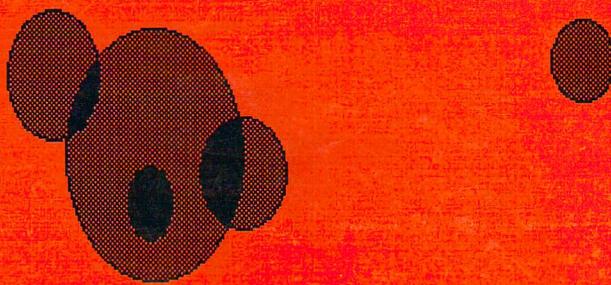


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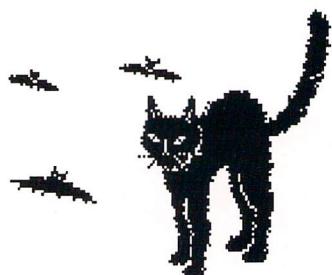
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This month's PRG is packed with tools and things that go bump in the night! Ha ha ha ha!

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More support for the 8bit world.

dH

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dieHard the Flyer for commodore

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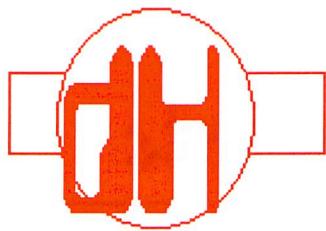
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View From The Underground

by
Count Brian L Crosthwaite



October, my favorite time of year. The trees are turning and losing their leaves, the air has a chill to it, the days are shorter as night falls earlier and earlier. This is when I reflect. **dieHard** has had a pretty good year. But the one thing I really like about October is Halloween.

When ghouls and ghosties come a-rappin'

office have been pretty weird. With Halloween in the air, Scot has been possessed by the spirit of Ludwig van Beethoven. He rants around here mumbling, "Midi-shmidy" or something like that. His hair is a mess and whenever anyone says anything to him he yells, "VUT?!?!"

I think Pluto has taken residence in my

g... , trying to rest, but since so much has died in so short a time, they reach an ectoplasmic concentration that would put Disney's Haunted Mansion to shame. This forced concentration of the non-living reaches its climax every Thirty-First of October. My house sits in its epicenter, and for one brief night, all night long you can hear them breath. Their hearts beat and the sky clouds up as it begins to rain. You can hear the organ from the church that once stood where my house now stands, playing the quite music it often played for many a dearly departed. What the hey, the kids love it!

If that isn't bad enough, things around the

g... , trying to rest, but since so much has died in so short a time, they reach an ectoplasmic concentration that would put Disney's Haunted Mansion to shame. And at four in the morning, that hand rising out of the ground outside the window of my basement office is getting really old.

Getting to this month's issue, we tried to remove the blood stains over and over again, but they just keep coming back. At least we got them off of the keys on the MIDI article pages. A spirit has invaded my flat C128, and you may want to have it nestled into your C128 as well. It's the **KeyDOS** ROM chip. And speaking of Greek Forms, how about Circe changing form? See **REVIEW!**. There is something creepy in **PRG...** Have a Happy **Halloween!**

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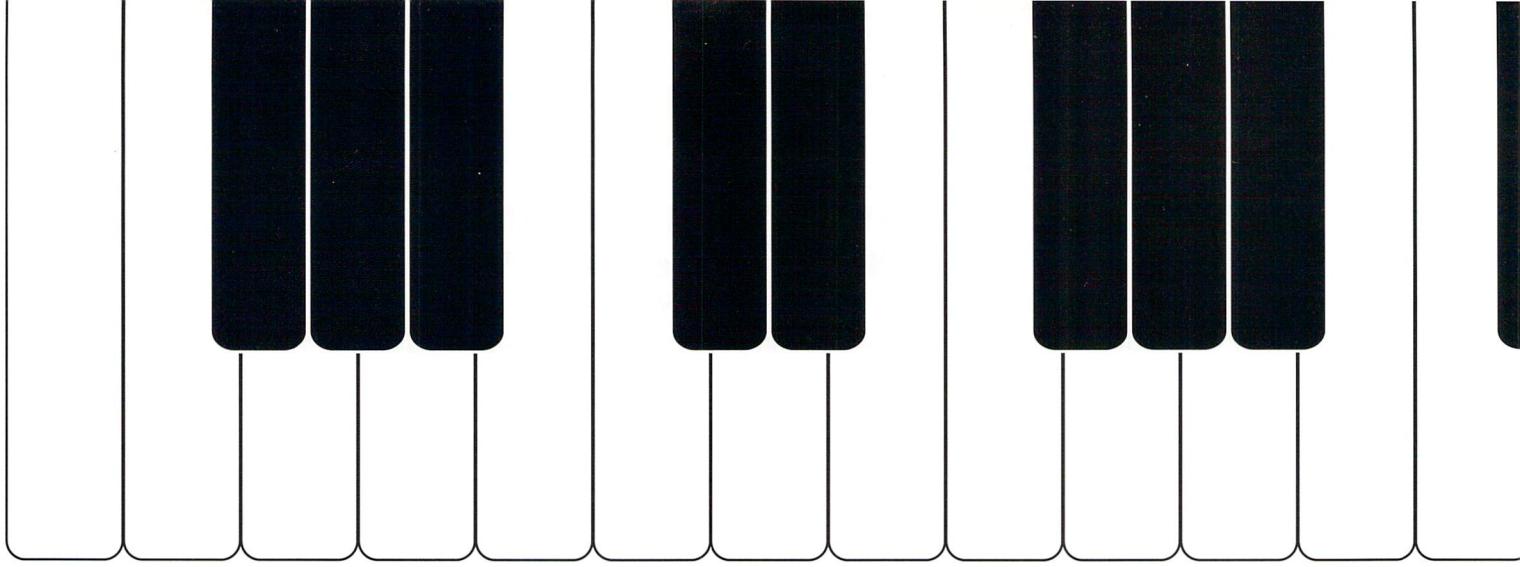
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Musical Instruments

At one time 'midi' only meant a dress about mid-calf in length. Nowadays the term has a new meaning, incorporating audio synthesis and digital computer technology. This is the first in a series about MIDI and Sampling technology. For the past ten years MIDI has been approached with great enthusiasm by a great number of publications and various manufacturers. Many books, articles, and magazines have been published about MIDI, mainly because there is a lot to say about it. These days, if you go into a 'progressive' music store, you just might see a display consisting of several electronic keyboards connected to personal computers and racks of electronic sound manipulation modules. You may also see acoustic grand pianos with electronic boxes attached under their keyboards connected to a sound system and acting like player pianos. What is this MIDI about and is it worth the investment in software, computer and musical equipment, and time? The cyber-techno junkies at dieHard think so, but only with proper education.

drum machines, and sequencers from different manufacturers to share specific digital information. For several different companies to join together in the development of such a technology is a milestone in the walkway of progress. A great deal of time was spent up front by these companies defining MIDI specifications for everyone to use. Standardization, what a concept (although it does have its limits). It's too bad some other technology manufacturers avoid such foresight and common sense, especially when they do so in the name of greed. Imagine if all the various brands of computers could easily interface to one another and share information? But no, all the operating systems have to be different, sigh. MIDI is essentially a computer operating system, not unlike the DOS you find in **commodore**, IBM, Apple, and other computers. And like DOS, MIDI has a language which the operating system understands. There is much to be accomplished with MIDI and Sampling technology. In presenting the possibilities, there is likely to be some unfamiliar terminology used. At the end of this article there is a glossary (my own) of these terms.

What You Can Do With MIDI

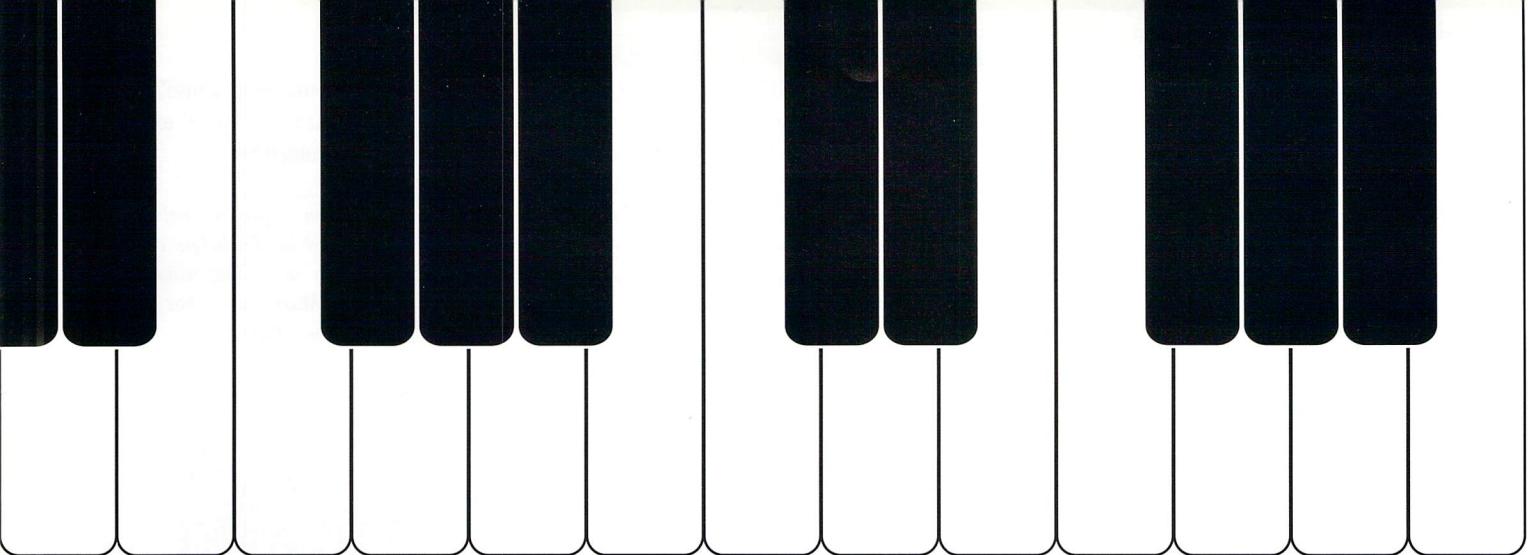
For starters, you can set up a multi-track recording studio in your own house. Think of it, no more costly recording studio time rentals. Armed with a personal computer, a multi-timbral synthesizer, the proper software, and some other toys, you can create and record fantastic music at home. Recording music with computers offers a lot of control over music and sounds. Recording to tape is not obsolete either. Portable multi-track tape recording has been and will be around a long time.

With MIDI, multi-track recording is referred to as sequencing and sequencing is done on computers. There is a lot of wonderful software that helps in sequencing, orchestrating, and printing music. There is

What Is MIDI?

MIDI means 'Musical Instrument Digital Interface' and is a computer technology developed by five top synthesizer manufacturers (Sequential, Roland, Yamaha, Korg, and Kawai) eleven years ago. It is specifically designed to allow the computers you find in synthesizers,

by R. Scot Derrer



at Digital Interface

even software that allows you to scan printed music and interprets the music into a digital format called General MIDI. In this new format, from what was originally ink on paper, the digitized music can be played back through a synthesizer as a sequence. Sounds like a player piano doesn't it? Instead of paper rolls with little holes controlling the piano, we have digital bits and bytes controlling synthesizers.

Sampling is the process of recording sound, any sound, and storing it in a digital format. With sampling technology, the sounds of the world are available. The digital format may be floppy disk, hard disk, cassette tape, DAT, and RAM or ROM computer memory. This stored sampled sound may then be accessed, retrieved, massaged, and tweaked. There are many tape and Compact Disc collections of high quality, sampled sounds available, most from fifty to several hundred dollars each. Most of the MIDI synthesizers have huge sound libraries on computer diskette. The sound palette ranges from A to Z, e.g. abalone shells being blown, to zithers being plucked. If you cannot buy the sound you want, you can arrange to sample it. Another source of sounds are synthesizer sound modules. These are synthesizers without the keyboard that have a large selection of internal sounds that can be accessed with MIDI. There are also software programs that assist with organizing, examining, and manipulating sampled sounds and these programs are generally called Editors and Librarians.

General MIDI is a sub-standard of the initial MIDI standards. Since all musical data is converted into computer data, it has been decided that there should be a general MIDI 'common ground'. Therefore, middle 'C' will always have a specific digital number and the remaining musical notes will have their own digital number. Percussion will always be in a certain digital range. Strings, brass, reeds, ethnic instruments, etc. all have assigned digital ranges that are consistent with General MIDI standards.

For the performing musician, this opens up new frontiers. You can purchase a MIDI system that attaches to your grand piano keyboard. Pop

in a pre-sequenced Compact Disc utilizing General MIDI and you have a digital player piano, playing Gershwin, George Shearing, Liberace, Bill Evans, Count Basie, Duke Ellington, Barbra Streisand. Turn off the accompaniment function and you can play along with orchestras embellishing your every note. This is neat stuff.

Another aspect of MIDI is the ability to connect more than one synthesizer together. That in itself is not too exciting. What is exciting though, is that with this configuration you can play more than one synthesizer from just one set of keys. Set each synthesizer to a different sound and it will sound like an ensemble from just one synthesizer.

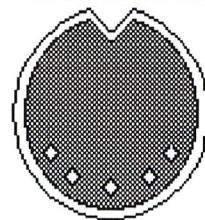


Fig. 1: The MIDI 5 pin DIN plug.

Combining sequencing and sampling enables you to digitally record musical compositions and transcriptions using instrument sounds from all over the world. Think of it, you can have any sound you want without knowing how to play that particular instrument. In days past, people were hired to attend recording sessions and provide their talent on their specific instrument(s). It was the only way to get the sounds you wanted. Now you don't have to have that expense or the cost of renting studio time and personnel. This, of course, opens a Pandora's Box.

Musicians with great talent are put out of work, recording studios feel threatened, and inept recordings are made by inexperienced musicians. The positive side is that if it weren't for this technology, a lot of people wouldn't be exposed to musical creativity. Not everyone aspires to be a professional musician. Some just want to play around and that is perfectly O.K. I propose that there are a lot of responsibilities accompanying this technology, especially if you aim for the professional arena. If you're really serious about playing music, get a real instrument, take lessons, and practice, practice, practice.

There is more MIDI can do and I'll address this in future columns. Now it is time to put on our technical hats so we can begin to understand MIDI basics. Welcome to MIDI 101.

How To Get MIDIfied

The components you need for a MIDI computer system are: a computer, a MIDI interface, MIDI cables, a MIDI compatible multi-timbral synthesizer, MIDI editing and sequencing software, and a desire to explore. A MIDI interface is a small box that plugs into the C64/C128 expansion port. Built into this box are MIDI input and output jacks in which the MIDI cables are plugged. The MIDI cable is very similar to the cables used to connect a computer and its peripherals. Because it's readily available and considered a standard configuration, the *5-pin DIN* connector was selected (see Fig.1). The key to how this works are the computers or microprocessors at each end of the MIDI cable with the MIDI cable being the road information travels on. Digital synthesizers have computers in them used to transmit MIDI data and to generate and shape sounds from various types of internal and external sound sources. There are disk drives built into some of these digital synthesizers so a disk operating system is needed. You can interface digital synthesizers to a number of peripherals such as hard disk drives, samplers,

cable connection ports: MIDI *In*, MIDI *Out*, and MIDI *Thru*. For instance, let's say you have two MIDI compatible synthesizers you want to MIDI together (see Fig. 2). One synthesizer you designate as the *master* or *instrument controller* and this is the one you will play. The other synthesizer is considered the *slave* and will respond to actions performed on the instrument controller via MIDI instructions. To

synthesizers laying around your house? What's wrong with you? Next month we'll expand on some of the topics presented here.

R. Scot Derrr has been a professional musician for 25 years. He earned his Bachelors of Science degree in Music Theory and Composition with a minor in Electronic Music and has been a commodore enthusiast since 1984.

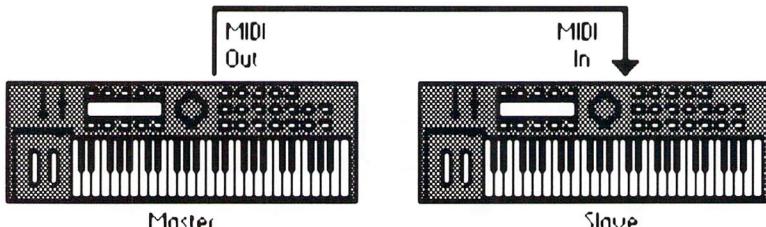


Fig. 2 Using a MIDI cable, the master controller is connected to the slave module.

convey messages in this setup, one end of a MIDI cable is connected to the MIDI Out jack on the instrument controller and the other end of the MIDI cable is connected to the MIDI In jack on the slave. This simple demonstration of MIDI is called *layering* and might be considered a very sophisticated type of remote control.

Messages and data are how MIDI works. Every time you play a note, release a note, step on a sustain or volume pedal, move the pitchbend wheel, or change patches the instrument controller generates and sends a unique message down the MIDI cable. When the slave module receives this data, it responds in exactly the same way as the instrument controller. So if you play middle C on the master, the slave will also play a middle C. If you pitch-bend what you play on the master, the

GLOSSARY

DAT - digital audio tape.

DOS - disk operating system.

MULTI-TIMBRAL - ability to send more than one sound at a time thru MIDI.

MULTI-TRACK - recording multiple tracks of music with a different instrument on each track.

SAMPLE - grabbing acoustic sound and storing it in a digital format.

SYNTHESIZER - electronic keyboard that produces sound via voltage.

READY.

■

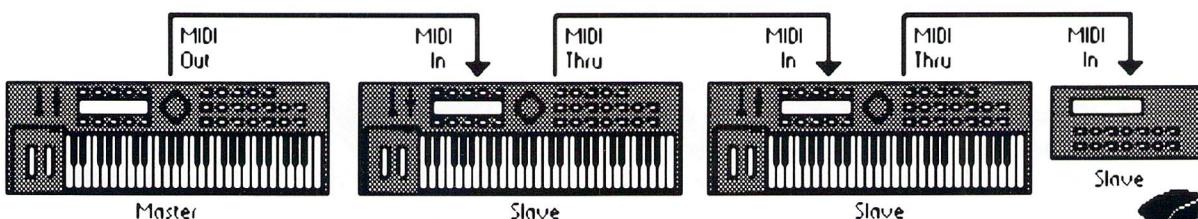


Fig. 3 Three slave modules are daisy chained to the master instrument controller using the MIDI Thru jacks.

sequencers, sound source modules, effects modules, MIDI channel organizers, other synthesizers, and computers. MIDI data can be recognized and interpreted as easily as the ASCII and PET-ASCII data on our C64's and C128's.

The data protocol of many computer systems is that data can travel both directions through a connecting cable and is called *bidirectional*. MIDI protocol is *unidirectional* which means MIDI messages and data travel in only one direction in a MIDI cable. Because of this, MIDI connectivity involves three MIDI

same effect will occur on the slave.

What if you want to connect more than two MIDI synthesizers together? Just connect a MIDI cable into the MIDI Thru port on the first slave to the MIDI In port on the next slave and so on down the line (see Fig. 3). *Daisy-chain* several synthesizers together with MIDI cables and you could have a wall of various sounds played from one keyboard. These days you can buy synthesizer sound modules minus the ivories that can be interfaced via MIDI and accessed from your *controller* synthesizer. What? You don't have several MIDI compatible



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July/August

September/October

Now/Dec

- 1988 -

January/February

March/April

May/June

July/August

September/October

Now/Dec

- 1989 -

January/February

March/April

May/June

July/August

September/October

Now/Dec

- 1990 -

January/February

March/April

May/June

July/August

September/October

Now/Dec

- 1991 -

January/February

March/April

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- 1988 -

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- 1989 -

January, February, March, May, June, July, August, September, October

- 1990 -

January, May, June/July, December

- 1991 -

Jan/Feb, June/July, Sept/Oct

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SCSI Hard Drive for the C64 & C128

HD Series Hard Drives are available in capacities up to 200 MB, are fully partitionable, and can emulate 1541, 1571, & 1581 disks while Native partitions utilize MSDOS-style subdirectories. HD's connect easily to the serial bus or parallel via RAMLink. Includes built-in JiffyDOS, SWAP feature and Real-Time-Clock. HD Series Drives offer superior compatibility with most commercial software including BBS, Productivity and GEOS. And with new pricing, HD Series drives offer the lowest cost/MB of any C64/128 storage device.

Power Backed Expandable REU

The fastest possible form of storage, RAMLink provides instant access to files and retains data while your computer is turned off. Easy to use and expandable up to 16 MB, RAMLink utilizes the same powerful operating system found in the HD. RAMLink also offers built-in JiffyDOS, SWAP feature, reset button, enable/disable switch, pass-thru port and RAM port for REU/GEORAM use. Ideal for those requiring maximum speed, expandability and compatibility with all types of software and hardware including GEOS.

U.S. Shipping Information

Books & Software: First Item \$5.00, plus \$1.00 for each add'l item. **Hardware:** \$5.50 per item, 2nd Day Air \$10.00. **Power Supplies:** \$7.50 ea, 2nd Day Air \$14.00. **Hard Drive:** \$15.00, 2nd Day Air \$25. **RAMLink, FD Drive:** \$9.00, 2nd Day Air \$16.00. **RUN Issues:** \$5.50 (3), \$6.50 (6), \$7.50 (12). **Note:** Prices subject to change without notice. Call for current price and availability. ALL Foreign Orders Call or Write for shipping details. **Payment:** MC, Visa, Money Order or Bank Check. COD shipments add \$5.00. COD's over \$200.00 require advanced deposit. Personal checks are held for 3 wks. No refunds on opened software. 30 day return policy. 10% restocking fee is required on all returns.

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The FD-2000 and FD-4000 disk drives utilize today's latest 3.5 inch technology. FD-2000's support 800K (1581 style) and 1.6 MB (High Density) formats, while the FD-4000's offer support for the 3.2 MB (Enhanced Density) format as well. Fast and reliable, they support 1541, 1571 and 1581 style partitions, Native Mode partitioning and can actually read and write 1581 disks. FD's feature built-in JiffyDOS, SWAP button and optional RTC. High capacity, speed and compatibility make the FD right for every application, including GEOS.

JiffyDOS

Speeds up disk access by up to 1500% while retaining 100% compatibility with software

- Speeds up Loading, Saving, Verifying, Formatting and Reading/Writing of Program, Sequential, User and Relative files unlike cartridges which only speed up Loading and Saving of PRG files
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- ROM upgrade installs easily into most computers and disk drives. Supports C-64, 64C, SX-64, C-128, 128-D, 1541, 1541C, 1541-II,

INPUT; READERS



Rarities

with R. Scot Derrer

I was very happy to see that everyone didn't abandon us 8bitters. I just hope the vendors that are selling the products now aren't just selling and later end up dropping the Commodore products too. I have a total of 7 computers from a couple of VIC 20's, three C-64's, and two C128's. It's good to have something to fall back on if one should fail.

Hope your magazine stays with us for some time and prospers. Thanks again.-- Richard W. Herbert, New Windsor, Illinois.

I have been using a Commodore 64 since 1986 and only recently purchased from Sears catalog warehouse, as they were going out of business, a Commodore 64C as my old 64 was going haywire after it ran for awhile.

I was given a VIC-20 with datassette which I am playing with some.

I also have purchased a C64, disk drive and printer that I gave to my daughter to use in home schooling her three little girls. -- Thomas E. Davis, Jacksonville, Florida.

I was sitting here last week reviewing issue 10 of **dieHard**. I would have reviewed others, but I don't have and others, so I decided to stick with #10. Having entered the C= world back in '84, I believe I have read almost everything (support wise) that I could get my hands on for our machines. It's nice to see someone is still interested enough to keep our

systems alive.

I operate a C128 BBS here in Miami. There are three of us who run C= support boards in the area. We are members of the Pearako Network, and connect up to 30 other boards all across the USA and Canada. This Network helps to keep our 8 bit machines alive and kicking, just as your Flyer does.

The question that keeps popping up on my BBS is, "Where can I find Support for my 64/128 machine?" Fact is, there are still hundreds of stores and mail order houses that can supply programs, hardware and repairs. We folks in the BBS business keep track of them, and know which ones are worth the time and money. -- Michael W. Eglestone, Princeton, Florida.

I'd have to agree with you, there are lots of places that support the commodores. Just look at Rarities. There are places that I have never heard of coming forth and letting us know of their existence.

Please send us a list and we will spotlight them in Rarities. Tell us MORE about this network!

Send us your input! **dieHard**, ATTN: INPUT, P.O. Box 392, Boise, Idaho, 83701.

READY.

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As part of our ongoing effort to sustain and feed our **commodore** 8-bit lifestyles, we seek to acquire and present information about anyone and anything that supports our natural habitat. Put us on your newsletter and catalog mailing lists. Tell us about your company and products. Send us your wares to test-drive and review.

A book I have had for several years caught my attention recently while doing research for my **Basic BASIC** column. It is called **BASIC Program Conversations**, from HP Books Inc. Unfortunately they are no longer in business and this book is out of print. It provides information on converting BASIC programs from one computer to another. The five computer systems it supports are Commodore 64, Apple IIe and II+, TRS-80 Models III & IV, TRS-80 Color Computer, and IBM PC & PCjr. It is well organized, full of useful information and is simply a wonderful gem.

On the software side, we received an interesting flyer from **KIDSVIEW SOFTWARE**, Inc. They specialize in Large Character Environment software for the visually impaired. The software is written for Commodore 64, Apple II, and MS-DOS machines. All on-screen text is enlarged as is the documentation's. There are four different titles available, **Kidsword**, **Mount Murdoch**, **Kidsview**, and **Kidsview Large Character**

Toolkit. For more information write to: **KIDSVIEW SOFTWARE**, Inc., P.O. Box 98, Warner, New Hampshire, 03278.

Two more **commodore** user group newsletters crossed our desks. **The LUCKY Report** from Kentucky and **Meeting 64/128 Users Through The Mail** from the USA. Both newsletters are available by subscription and are full of information. **The LUCKY Report** is a monthly newsletter from an existing user group and represents the familiar computer club. **Meeting 64/128 Users Through The Mail** is marching to a different drummer. They are not a user group or a computer club. People from all over the U.S. contribute to this publication so it has a more universal feeling. If you're interested, write them and be sure to tell them you read about them in **dieHard**.

Louisville Users of Commodore of Kentucky
P.O. Box 19032
Louisville, Kentucky 40219-0032

Meeting 64/128 Users Through The Mail
Jean Nance, President
1576B County Rd. 2350 E.
St. Joseph, Illinois 61873

dieHard
ATTN Rarities
P O Box 392
Boise ID 83701-0392

READY.

REVIEW!

This month **REVIEW!** takes a look at **KeyDOS**, a DOS enhancement system for the **commodore 128** and **128D** computers. **KeyDOS** is on a ROM chip that you can install into either an REU or inside the C128 in the empty chip socket on the mother board (see photo). Installation in the C128 is fairly quick and easy. REU installation will most likely involve having to solder in a chip socket. There is a place for it.

What kind of user is **KeyDOS** for? My number one answer to that question is the programmer. However, casual users may find many of its features to be useful as well. **KeyDOS** adds some very powerful features to your C128. It's hard to believe the number of things this single chip allows your C128 to do with ease and convenience.

KeyDOS is easily activated either by resetting (or turning on the C128) or by entering **SYS 65366** from direct mode while holding down the **<ALT>** key.

A help screen is available by pressing **<ESC><arrow back>**. A list of the key sequences is placed on the screen along with where they take you. The key sequences are short. **KeyDOS** uses an added set of ESCape key sequences. I say added, because the old ones are still intact. Most everything is menu oriented. In addition, the f-keys are redefined along with the **<RUN>** and **<HELP>** keys.

<RUN> will execute **BOOT** on the active drive. It will auto boot any autoboot program on disk, or if you place the cursor in front of a filename in a directory listing it will boot the file (as long as it's a bootable file).

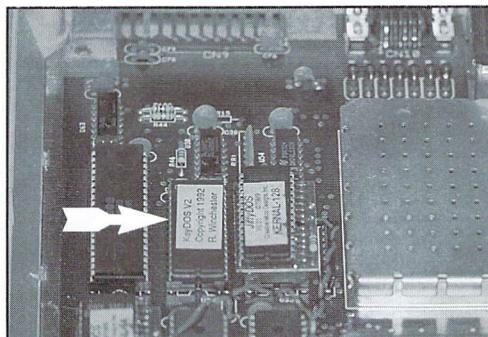
Pressing **<HELP>** will print "onu(peek(186))+chr\$(13)" to the screen, saving you some typing when saving, loading, or doing any disk function where you may need to type "onu(active drive)." The f-keys get a new set of definitions as well, including **LOAD** a program, **RUN** a program, **RUN** a C64 program, send a **SEQuential** file to the screen, scratch a file, scratch then save a file and change the active drive. One thing I really found nice was it redefined **<F3>** to call up a directory on the active drive -- returning it to the original f-key after **JiffyDOS** moved it over to **<F1>** (for those who have **JiffyDOS**). Which leads to the next point,

KeyDOS

***** FANTASTIC!
***** GREAT
***** GOOD
** POOR
* REALLY BAD

KeyDOS is compatible with **JiffyDOS**.

KeyDOS gives your C128 the ability to execute batch files. Batch files are direct mode BASIC commands that are stored in sequential



files and executed off the disk so they will not disturb a program in memory. There are demos of this feature on the accompanying disk, such as a phone directory.

There is a DOS utility built in for easy copying, printing, renaming, scratching, and any other disk commands.

RAMDOS comes built in, along with a clock, screen dump, 1581 drive support, **Hexpert**, **Diskmon**, an UnNEW feature, a video manager and more. Most of these things are accessible from menu driven systems, although to use **Hexpert** and **Diskmon** will require a good understanding of monitors and machine code.

One of the things I found to be very useful was the **1581 Visual Partitioner**. The screen displays a graphical representation of the disk's layout. You see where the Block Allocation Map (BAM) is located as well as used tracks. You can then set up partitions without having to calculate everything out. You simply look to see what is available and use it. You can look at the contents of a

subdirectory with great ease. You can format an entire disk or just a partition. If the partition is larger than 3 tracks you are automatically prompted to see if you want to make a subdirectory.

Subdirectories on the 1581 can be opened by using **<F8>** (this is installed optionally after booting computer up). Press **<F3>** to display a directory, cursor up to the subdirectory and press **<F8>**. The subdirectory will be opened up ready to access.

For those who have had those devastating **GEOS** crashes when all seems lost (especially when an REU is full of originals), there is hope. **GEOS SuperRBoot**. This program works alone or in conjunction with **ACTIVATOR** (found on the accompanying disk) to make switching between **GEOS** and native mode a lot more like simply being in native mode after power up. The **RESTORE** key will now work and the reset button will be restored to its normal function after using **GEOS** by simply clicking on the **ACTIVATOR** from the **DESKTOP** rather than **BASIC**. Returning to **GEOS** is *fast*. If you do have a crash, recovery has a better chance because the **GEOS SuperRBoot** feature will reset the REU as well as the drives. The order they were in during the crash is not a factor anymore. It even works on **GEORAM**.

You can easily and quickly renumber the disk drives (REU included) from the keyboard. **<ESC><+>** will bring up the renumbering feature. You can renumber as many drives as you wish just by answering the two prompts, *renumber*: and *to*:. **<ESC><->** will reset all drives, 8 through 15 and tell which ones are online and offline.

<ESC><British Pound> runs **New Collect**. This validates a disk that has a boot sector, then reallocates it in the **BAM**. Whereas the old **Collect** simply validates and reclaims any boot sector area for future use. (I like this one!)

You can easily switch between two separate 80 column screens with **<ESC><^>**. This is nice if you want to compare two programs or two separate areas of code.

<ESC></> takes you into a screen editor called the **Video Manager** that allows easy manipulation of both the 80 and 40 column

screens. Text, background and border colors, 80 column reverse on and off, interlace on and off and the character height can be altered. The double width characters on the 80 column screen can be activated or turned off (this makes a 40 column screen out of the 80). The blink rate of flashing text and the cursor can be set as well as the shape of the 80 column cursor. The TAB distance can also be set from within the Video Manager.

These newly altered areas of memory can be saved to disk, via BSAVE (binary save) to be loaded into your own programs, saving you lots of coding. A manual BSAVE has to be done by the programmer since there is no option to make a file from the menu (**KeyDOS 3.0** maybe?).

<ESC><;> performs a screen dump that will send the screen to a PETASCII printer or a disk file. Be sure you know where you're sending the information, <f7> will take care of that. <f7> prints "poK186," to the screen, all you have to do is select the device number and press <RETURN>. (Poking a number into 186 sets the present device number.)

There is a single drive file copier.

Also included is a compiler to allow the redefining of the f-keys.

FIND, REPLACE, and backward scrolling are now possible for editing BASIC. @GET"text" will find text in a BASIC program. Ranges to look for text can also be set. BASIC commands and statements can also be found. @IF "text" THEN "replace" will search out and replace text. Backward scrolling lets you scroll the program listing upward, in case you missed the part of the listing you were looking for during a normal LIST.

The C128's machine code monitor gets some nice enhancements as well. **Diskmon** adds a simple to use wedge. The contents of the monitor can now be dumped to the printer or disk with simple key strokes.

Hexpert is also designed to be used in conjunction with the C128's built-in machine language monitor. **Hexpert** allows you to monitor your programs as they are executing for the purpose of debugging code. **Hexpert** allows output to the 40 column and 80 column screens at the same time so you can monitor the program's performance without disturbing the program's display. **Hexpert** has what is called a break point, (up to 10 per program, used only once then they are erased) that is put into your program. When hit, the program is halted and **Hexpert** comes into action.

This is, of course, only skimming the top since this chip is so loaded.

There are 52 pages of documentation, most of which is no more than a couple of pages or less for most parts of **KeyDOS** with exception of **Hexpert**. The instructions are nice and clear and well organized. Included is a memory map and quick reference to all the commands.

Because of its power, ease of use and convenience, I would recommend this to any serious C128 user.

This one gets:

* * * * *

READY.

KeyDOS is available from:
Antigrav Toolkit
P.O.Box 1074
Cambridge, MA 02142
for \$32.50 complete -- tell them you read about it in **dieHard!**

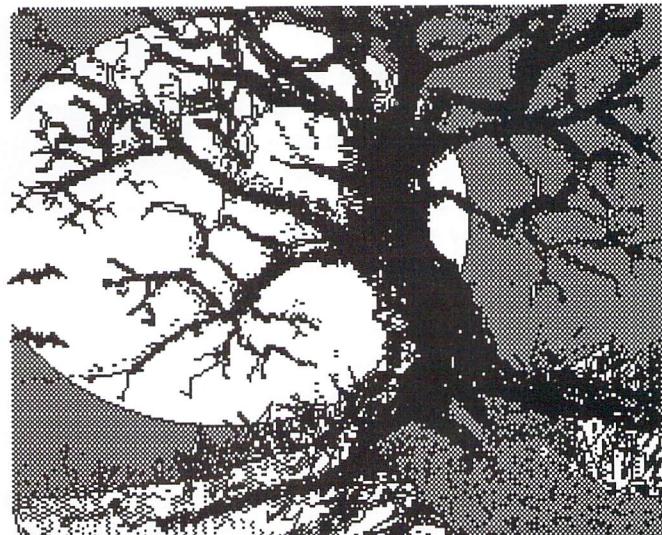
PSG=Prn Shp Grph-Sd/sides-G/games-M/math-S/sci-E/Eng-ED/educ
GE/geog.-UT/util-PR/prod-TE/telecom-MU/music * For
PSGraph, state A/3 Blk/non-C= or B/2 Blk/C= Printers!

[] [] [] [] []	ITEM + COST + SHIPPING & HANDLING	[] [] [] [] []
A-KJV BIBLE + PSG + MU +G 35+4	N-Recipe Potpourri-178 meal	7+1
B-Holiday Graphics/Music 7+2	O-KJV BIBLE -- For the +/4 30+4	
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F-Bks- Instant Activities 1+2	S-SPORTS 419 PSG -- Mixture 10+2	
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We've most of the PD Select C= Library. We're in year #3. Thanks!



You'd better pull the
covers up close tonight,
for you never know what
on your neck shall bite!

Game REVIEW!

This game comes packaged in a folder with the disk in the front sleeve and three pages of instructions in two plastic

The software is not copy protected.

page covers. The documentation is short, to the point, and very well written. The first thing the manual says to do is make a backup copy. The software is not copy protected so if you manage to damage your disk it will be the backup -- not the original.

The game takes almost a minute to load on a standard C64. Once loaded, the music starts and you are greeted by a hooded figure. The fire button takes you through text telling of Perseus' daughter Circe who married Odysseus. Odysseus gets kidnapped by a robed figure after putting him under a spell. Circe has a wizard transform her into a winged horse so she can rescue Odysseus and the game begins.

Animated graphics and spectacular backdrops make up the non-play areas of the game. These are areas where the story unfolds in the form of narration and dialogue between the characters. You can tell who is talking by the color of the text matching the color of the character talking. The winged horse did not have her wings in many of the dialogue scenes (?!?!?).

Between these dialogue filled scenes are arcade levels where actual gameplay takes place. Backdrops

ranging from a spectacular (looks digitized) high mountain range to a scrolling cave full of stalactites and stalagmites make up the game screens. I found these arcade sequences to be challenging.

The second arcade level, however,

parts of the program are in BASIC you can hit <RUN/STOP><RESTORE> and list out the module, then change it. Or find out the name of the next module and load that to continue. Your Super Snapshot or Final Cartridge cannot disable the sprite collisions on these, so

a bit of hacking may be in order.

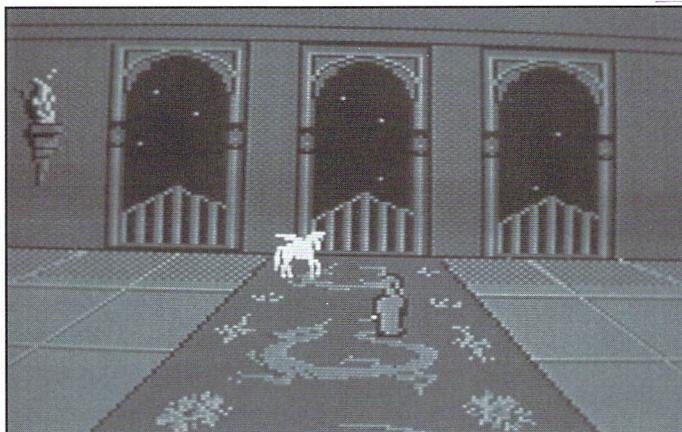
The cave sequence later in the game is machine language and you can disable the sprite to

background with most cheater cartridges if you feel so moved.

Cheating aside, this game is very challenging and a lot of fun. I found it to be a unique experience full of color, sound, and challenge. If you get frustrated playing this game, there are options open to you rather than just putting the game away. I recommend a fast loader of some kind (although overall the load times were not too bad). Despite the fact that much of the programming is in BASIC, it is not a slow game. This is *not* your typical text

adventure. You will never type text in or make decisions that lead to a different place every time you play the game. The only real interaction comes during arcade sequences. You are, however, the one who decides when to advance to the next screen of text, which is nice since I like to go at my own pace and not what is dictated by the

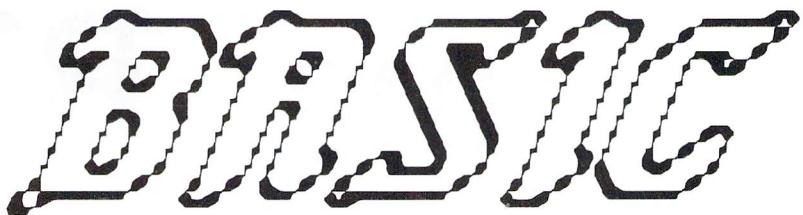
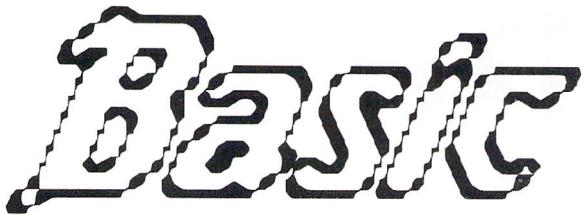
You can tell who is talking by the color of the text.



the option to replay until you succeed, I found that cheating on the second level is one of the best ways to get through it. Cheating? Much like Captain Kirk and the Kobayashi Maru. Since the main

person who wrote the program.

The Wings Of Circe:
\$19.95 Creative Pixels Ltd., P.O.Box 592,
Library, PA, 15129. (See ad on pg 27)



Concluding BASIC 4 Food Groups

In last month's column the focus was on the four BASIC food groups. The four BASIC commands -- PRINT, GOTO, FOR-NEXT, and INPUT -- provide an excellent basis from which to learn about BASIC programming. Let's continue the FOR-NEXT discussion and wrap it up with the INPUT statement.

Repeating Actions with FOR-NEXT Loops

Repeat action loops can sometimes be tricky. Just remember to completely surround the action you want to repeat with the loop. To utilize this technique with a graphic character, it might look like this: FOR X=1 TO 40:PRINT"[shift Z]";NEXT

Here, the action between the FOR and NEXT is repeated 40 times. The action is the PRINTing of the graphic character (a diamond) across the screen. Let's see how this works in a program. Type NEW and press <RETURN>, then enter the following lines of code. You'll notice the use of the TAB command which we haven't covered yet. TAB is another way of spacing and will be explained shortly as will the similar SPC command.

```
10 PRINT "[shift CLR] "TAB(12) "UNDERLINING TEXT"
20 FOR X=1 TO 40
30 : PRINT "[shift C] ";
40 NEXT
```

When you RUN this program, you should have centered text with a line underneath. The semicolon in line 30 makes the [shift C] graphic print on one line across the screen, with the FOR-NEXT loop printing 40 of these characters. The TAB command is PRINTing the "UNDERLINING TEXT" literal (a literal is any text in quotes and will print on the screen as it appears in the listing) after spacing 12 spaces or TABs. If you have a VIC20, change the 40 in line 20 to a 22 and the TAB value in line 10 to 3.

A Screen Box

Now let's try something a little more fun. The following program displays a centered literal and then draws a box around the edge of the screen below the literal. Type NEW,

press <RETURN>, and then type in the following C64 program. Also note that since the programs are getting longer, I am using BASIC line numbers starting with 100. This is so the lines of code line up more evenly and look nicer when you LIST or print it.

```
100 PRINT "[shift CLR] "TAB(14) "A SCREEN BOX"
110 PRINT "[1 space][shift U] ";
120 FOR X=1 TO 36
130 : PRINT "[shift C] ";
140 NEXT
150 PRINT "[shift I] "
160 FOR X=1 TO 19
170 : PRINT "[1 space][shift B] "TAB(38) "[shift B] "
180 NEXT
190 PRINT "[1 space][shift J] ";
200 FOR X=1 TO 36
210 : PRINT "[shift C] ";
220 NEXT
230 PRINT "[shift K] "
240 END
```

Remember, the semicolons at the end of some lines make the graphic characters print next to each other across the screen on the same row. If you remove the semicolons, you will get single characters down the screen. Also remember, the C64 (C128, Plus/4, etc.) has 40 columns across and 24 rows down whereas the VIC20 is 22 columns across and 23 rows down, so change the following lines if you have a VIC20. And don't neglect to RUN this program.

```
100 PRINT "[shift CLR] "TAB(5) "A SCREEN BOX"
120 FOR X=1 TO 18
160 FOR X=1 TO 18
170 : PRINT "[1 space][C= B] "TAB(20) "[C= B] "
200 FOR X=1 TO 18
```

REMark: A programming shortcut to position information (text, graphics) on your screen or printer can be accomplished by using the TAB and SPACE (SPC) commands. Using these two commands is a lot easier and faster than using the common cursor-down/up and cursor-right/left commands within quotes. Both the TAB and SPC commands accept a value from 0 to 255 and essentially function the same for screen movement, TAB(1)=SPC(1). Here are examples of TAB and SPC using the maximum value of 255.

```

PRINT SPC(255) "SPACE 6 ROWS AND 15 SPACES OR
255 SPACES"
PRINT TAB(255) "TAB 6 ROWS AND 15 SPACES OR
255 SPACES"

```

Each of the above commands will initially move the cursor 6 lines down and 15 spaces across the screen because of the value 255. With 40 columns across on the C64 here is how you can figure it out: $255 / 40 = 6$ (rows) with a remainder of 15 (spaces).

The INPUT Command

The last of my BASIC Four Food Group is the INPUT command. This command is set up to receive data from the keyboard and wait for the RETURN key to be pressed. Fairly simple and a lot of fun to use because with it, you can make your computer appear to have intelligence. The INPUT command must have a variable following it to store the information it is requesting. In this case we are using a string variable, NA\$, to accept alpha or numeric characters. Type NEW, press <RETURN>, and type in the following program.

```

10 PRINT "TYPE IN YOUR NAME"
20 INPUT NA$
30 PRINT "HELLO[1 space]" ;NA$

```

When you RUN this program, the computer prompts you to enter your name. The computer then waits for you to type something in and press <RETURN>. Once you press <RETURN>, the computer stores the information in the variable NA\$ and then prints HELLO followed by what you typed in. The semicolon is used in line 30 to make your name print on the same line as HELLO. INPUT can also print literals in addition to requesting keyboard input as the following example demonstrates.

```

10 INPUT "TYPE IN YOUR NAME" ;NA$
20 PRINT "HELLO[1 space]" ;NA$

```

Artificial Intelligence, Sort of

Here is a lengthier program that utilizes the BASIC 4 Food Group commands. We are programming the computer to ask two questions and then make a comment. Type NEW,

press <RETURN>, and type in the following program.

```

100 PRINT "[shift<CLR>]"
110 PRINT "HELLO. I AM A COMPUTER"
120 FOR T=1 TO 1000:NEXT
130 PRINT "PLEASE TYPE IN YOUR FIRST NAME" ;INPUT NA$
140 FOR T=1 TO 1000:NEXT
150 PRINT "THANK YOU " ;NA$
160 FOR T=1 TO 1000:NEXT
170 INPUT "PLEASE TYPE IN YOUR AGE" ;A
180 FOR T=1 TO 1000:NEXT
190 PRINT "THANK YOU " ;NA$
200 FOR T=1 TO 1000:NEXT
210 IF A > 55 THEN PRINT NA$ , PRETTY GOOD FOR AN OLD
FOGEY. " :GOTO240
220 IF A > 35 THEN PRINT NA$ , CAN YOU TRUST PEOPLE
OVER 30? " :GOTO240
230 PRINT NA$ , YOU DO NOT HAVE A CLUE YET. " :GOTO240
240 PRINT "I AM OUTTA HERE. BYE"
250 END

```

Some notes on what this program is doing. PRINT is used to display all of the literals to simulate communication between you and the computer. Beginning on line 210, GOTO is used to bypass code because if the first condition tested is true, there is no need to test the next condition. If your age is greater than 55, the program PRINTS that literal and jumps to line 240. If your are younger than 55, the condition of being over 35 is tested in line 220. If that test is true, the program PRINTS that literal and jumps to line 240. If that condition is false, line 230 is executed followed by lines 240 and 250. The FOR-NEXT loops are used to slow things down a bit and the value of 1000 may be increased or decreased. INPUT was used two different ways: once with a string variable, NA\$, to store your name and again with a numeric variable, A, to store your age. Note the absence of the PRINT command on line 170 yet a literal is PRINTed. RUN this program and observe what it does. LIST it and study it, change it if you like.

This month's Basic BASIC programs are on **The SPINNER**. Next month we will re-visit variables and introduce the GOSUB and CHR\$ commands. Until then, have fun with all of this and write me if you have questions, comments, or suggestions.

DieHard, ATTN: R. Scot Derrer, P.O.Box 392, Boise, ID, 83701-0392

READY.

Cyberspace Cowboy

Hello again! This month we are going to look at a few of the many things you can do on the Internet. First, of course, you must have access to the Internet. This might be through your place of employment (I'm sure the boss would love it if he caught you fooling around on the company account). It might be through a college or University you attend. Or, as is the case for most computer hobbyists, it might be through one of the many and varied online subscription services. I still feel that the rate structure on Delphi offers you the most bang for the buck.

Well, just what *can* you do on the Internet, anyhow? Well, you can search for areas of interest by using a search utility such as WAIS (Wide Area Information System). WAIS currently allows you to select from a list of over 350 sources. Once one of the sources has been selected, you can then commence your search by keyword. WAIS seems to be just a bit slow and clunky, but it is very powerful.

You can use a GOPHER. GOPHER allows you to browse all over the world from a simple to use menu system. Once you start searching an area that looks interesting via GOPHER, there is no telling where you may end up. Sometimes the levels of menuing get many layers deep. A particular selection might lead you to another menu, a text file to help you along the way, a database to prowl through, or a file to download.

Or how about FTP (File Transfer Protocol)? With this,

you can log on to remote computers and explore their directories, choosing files that you want to download. The absolute easiest way to use FTP is to use the FTP option of GOPHER.

Ready for a few more fun ideas? You can "chat" with other Internet users from exotic and/or interesting parts of the world. Why accept a TV newscaster's biased and agendaized account of some current event which is of interest to you when you can get into a direct question and answer session with someone who is living the event?

You can track down that long-lost friend using White Pages, phone books, and several other research sources. You can send E-Mail to someone who subscribes to a different online service than you do. You can download GIFs which have been made available by NASA.

The possibilities are nearly endless! You are really limited only by your own imagination and curiosity. The Internet is expanding daily, far outstripping the old saw about the sum total of human knowledge doubling itself every 18 months.

There are many informative and educational text files available out there. You can go to M.I.T. and download the latest edition of the Hacker's Dictionary. (Is this what those guys in the Artificial Intelligence lab are doing with all the big-buck grants?)

So far, this information has been generic, that is it isn't specific to any particular home

computer. Well, yes, I guess it is about time the Cowboy got down to what you've been waiting for -- namely the **commodore** goodies! By the time you read this, it is hoped that the GOPHER in the **commodore** section of Delphi will have been debugged and made available to the **commodore** faithful. As it stands right now, we can go to the Internet area of Delphi and FTP to sites offering **commodore** software and information, but it will be so much easier when the **commodore** GOPHER is in place and we can do it with a menu rather than wandering through addresses and paths. Next month I will be taking you on a tour of some FTP sites, hopefully via the **commodore** GOPHER. If needs be, we will get there the hard way. Either way, get there we will!

In the meantime, you might want to check your local library for a copy of "The Whole Internet Users Guide and Catalog" by Ed Krol. Also of interest is the LaQuey book "The Internet Companion".



Here are some File Transfer Protocol addresses to give you an idea of the sort of paths involved...

cc0.caltech.edu
(131.215.48.152)
/pub/rknop

cwaves.stfx.ca (141.109.27.2)
/pub/c64

nic.funet.fi (128.214.6.100)
/pub/pics/jpeg/games/c64

tolsun.oulu.fi (130.231.96.16)
/incoming/c64
/pub/c64

Table 1. pathways



Archaic Computer

The Computer Store Of The Past

Introduced by Brian A. Crosswhite



W

Welcome to The Computer Store Of The Past. Last month we visited 1985. It looks like we didn't get out of that year. It was the year I discovered that having once been an Art student, studying Theatre, I found myself painting lots of scenery! My random numbers study was coming along slower than a snail's pace. I was thankful for my Datasette. My favorite computer game at that time was **Stompers**, something I spent four days typing in from one of the many **commodore** specific publications of long ago. It was one

of the really big programs that I tackled from the type in listing realm. I saved it to cassette.

That summer was spent photographing wildlife in and around the area of northern Idaho and using my C64 for music and sound effects for a Radio Series called **Your Mind**. When Noesis (my computer) wasn't making noise he was plotting points and doing more on random numbers. All of which was saved to cassette, with the exception of the photos.

My FSD-1 came into my life later that summer. It wasn't until after I was married and my son was on his way, that I got a C128. By

then 1985 was well into the past.

Let's zip up the 90's for a minute. Noel Plank as sent me some outstanding reviews, one of which just happened to be on the Partner 128. Since I was planning a follow up to last month's Partner 64 now would be as good a time as any to let Noel take the reins of Archaic Computer's review for this month. His rating appears at the end in the form of a product report card -- a cool idea. Now, let's return to 1985...

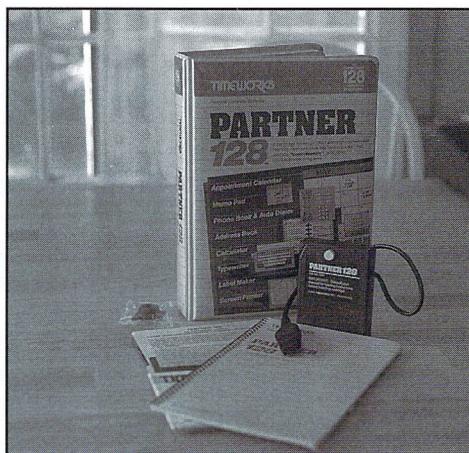
Partner 128

REVIEWED BY:
NOEL PLANK

Partner 128 is a RAM-resident cartridge program that suspends an existing program in the computer with the push of a button, giving you a window into eight convenient desktop utilities. When you are done using one of Partner's accessories, you can return to the exact point in the program where you left off, simply by pressing <ESC>.

The "Appointment Calendar" utility is used for keeping track of appointments or important dates such as birthdays. Months of the year may be viewed entirely in the traditional calendar format, along with your abbreviated notes marked for attention on a particular day. For more detail on activities previously entered for a scheduled day, simply move the cursor to the day you wish to view and press the return key. Data stored in these calendar days can be entered in a similar fashion. Each month's data can be saved as a separate file by simply pressing an assigned function key.

The "Memo Pad" is a mini word



processor which I find useful to call up when I need to make a note to myself. These notes or memos can be stored or retrieved at anytime without disturbing the text in the program to either a disk or printed out on paper. Or if you elect, the computer can be turned into a simple typewriter while using the "Memo Pad" option.

The third option on Partner 128's menu is the "Address/Phone List" function that also acts as an Auto-Dialer when used in conjunction with an auto dial modem. Partner supports any Hayes-compatible modem including

Commodore's own 1670. You can also use a Commodore 1660 or a 1650 type compatible modem too. To use the Address/Phone List utility you must first enter the names, addresses, and telephone numbers into your personal directory and save this information to a disk file by pressing a function key and hitting <RETURN>. To use the Auto-Dialer feature you must have the program set up to the proper modem type and the address list loaded into the Partner utility. Next you may select the search function with a function key and enter the characters you want to look for. The cursor will automatically scroll to the first file with those letters and stop. Then all you have to do is move the cursor to the beginning of the number you wish to dial and press the <f6>. The modem will auto dial the number you selected. When the connection is made, hit the space bar and pickup the telephone receiver to talk to the party you've called.

You can print address lists or phone number information onto paper or labels. Address lists can also be loaded into the **Word Writer 128** program for use with form letters.

The next option on the menu is "The

?? ? ? ? ? ? ? ? ? ? ? ? ? ! ! ! ! ! !

Q: I was wondering how one goes about copying **GEOS** files off of non-**GEOS** disks when there isn't any room on the disks to allow for conversion to **GEOS**. Marcus Krejci of Rural Retreat, Virginia.

A: A normal file copier should do the trick. Or you can copy the file over to another disk while inside the **GEOSphere** (the **GEOS** environment). It should copy like any other file. It's after the file has been converted to **GEOS** that you need to actually use **GEOS** to get all the file's information transferred. If it is a *disk* you wish to convert to **GEOS** and you are informed that there is not enough room, simply move some of the files to another disk, then scratch them off the original. Then you can proceed with the conversion in either case.

Q: I have a good old C64 and 1541 disk drive. I need a sort program that will sort all programs or data on a disk. Barry F. Ashworth of Tucson, Arizona.

A: I use the Final Cartridge III's directory program to sort my files. It is easy, I can see every thing on the screen. **GEOS** can also be used to place programs in the order you want them. Simply selecting them in the order you want then moving them into an empty REU, then moving them to a new disk allows for easy sorting.

Q: I have a Koala pad and wonder what I need to dump the pictures to the printer. I have made a couple of pictures and have tried a variety of routes to get it to print but

think that since it is HIRES that it won't print. Richard W. Herbert of New Windsor, Illinois.

A: The original Koala software didn't have the ability to print the pictures, but they released a program that could print these pictures called **KoalaPrinter**. If you cannot find a



copy of that, you might look into a utility cartridge like the Super Snapshot or the Final Cartridge. If you have another drawing program that can print out its pictures you could convert the Koalas into that format for printing.

Autograph is one of the best conversion program I've seen. It is in the Public Domain. You might check Q-Link, write to Caloke Industries (see ad pg.15), or check with a local user group.

Graphics Integrator 2 is a commercial conversion program that just happens to have advanced printer support. It is available from Software Support International for just under \$20 (Plus postage. See end of REVIEW!, pg 15, for address).

Q: What chip runs the 128? Is it the 6510, like in the C64? I'd also like to know what is inside the C16 and Plus/4 computers.

A: The 8502 and a Z80B are the brains of both the C128 and C128D.

The 8502 can process at pseudo 1Mhz with the VIC II displaying or 2Mhz without and runs 64 and 128 modes. The Z80B runs in CP/M mode. The 8501 is in the Plus/4 and C16. It is 6502 compatible (as is the 8502 and 6510).

The C64 has a 6510. The VIC20 and most PETs have the 6502. The SuperPET has a 6502 and a 6809 (16 bit).

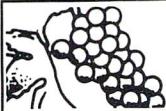
Q: I bought an HP LaserJet 4ML, All the drivers that came with them were, of course, for either the Mac or PC. So I asked Douglas Bober, aka RENTaLASER on Q-Link, if he knew where I might get my hands on an RS232 serial interface for my C128D. He said the way to go was to use GeoCable and the patch program from CMD.

My patched **GEOPUBLASER** didn't work too good. The top of the document looked ok, but parts of the graphics fonts were missing and striped.-- Brian Crosthwaite of Boise, Idaho.

A: Apparently, the version of **GEOPUBLASER** that comes with the newer disk (the 2 disk set) does not work with the patch. **GEO-PUBLASER1.8** does. If you have an older version you'll need **GEO-PUBLASER3-10-88**. Both of these are on Q-link under BSW applications.

Douglas Bober is working on a column for **dh** on the subject of using a laser printer with a C64. Stay tuned!

READY.



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R 1403	composite high resolution monochrome video with cable.....	\$65.00
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DOS 8 Don'ts

Joel Ellis Rea

DOS and Don'ts is reprinted with permission from LOADSTAR. The Complete DOS and Don'ts is available on 1541 disk for the C64 for \$9.95, plus \$4.50 Shipping for 2nd day delivery from Softdisk, P.O. Box 30008, Shreveport, LA, 71130.

Introduction to APPEND

This time we will discuss some advanced SEQuential file handling, including an undocumented OPEN mode!

The undocumented OPEN mode parameter is ,A for APPEND. The ,A parameter tells DOS that you want to OPEN an existing file, but that you want to WRITE data to it, not READ data from it. The ,A parameter tells DOS that all new data will be written to the END of the file, instead of the BEGINNING. In other words, DOS is told to APPEND new data to the END of an ALREADY EXISTING file! This saves having to OPEN the existing file for READ, OPENing a dummy file for WRITE, copying every character from the READ file to the dummy file, CLOSING the READ file and Deleting the READ file, before you can WRITE the new data. You would then have to CLOSE the DUMMY file, then RENAME the DUMMY file to the name of the old, now deleted READ file! (AND you would have to hope you had enough free space on the disk to hold a copy of an existing file!). The ,A(APPEND) parameter saves you that trouble, and enables you to add new data automatically.

APPEND Usage

=====

The format of an OPEN statement for APPEND is:

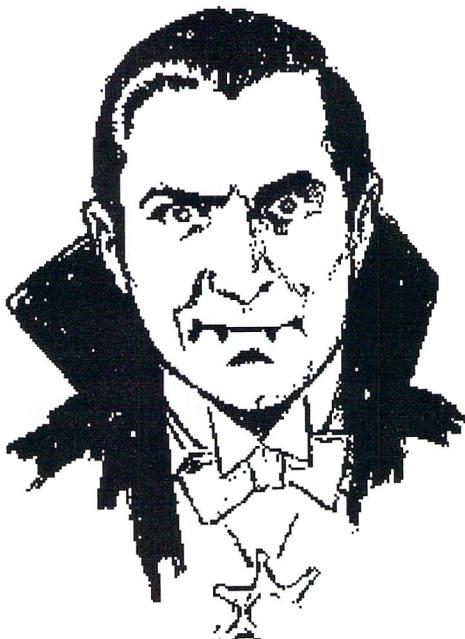
```
OPEN <filename>,
      <unitnum>,
      <channelnum>,
      "<filename>,
      [<type>],
      A[PPEND]"
```

Some examples:

```
OPEN 8, 8, 8,
      "DATAFILE,A"
```

```
OPEN F%, U%, C%, F$ +
      ",S,A"
```

```
OPEN 1, 8, 2,
      "1:MACHLANG,P,A"
```



The first example OPENS the file DATAFILE as file #8 via channel #8 of drive unit #8. The file type is not checked, and the OPEN succeeds if the file exists and is of type SEQ, PRG or USR (REL and DEL don't work with ,A[PPEND], of course). If the OPEN succeeds, all further PRINT#8 statements will write their data starting at the END of DATAFILE.

The second example OPENS a file whose name is in the string variable F\$, giving it the file reference number specified in the integer variable F%, via the channel in C% on the unit in U%. Since the file type was specified, the OPEN fails if the file is not found, or if it is found but is not of type SEQ.

The third example OPENS file 'MACHLANG', which must exist on drive 1 (of a two-unit drive such as a CBM 4040 or an MSD SD-2) as a PRG file. This might be used to add bytes to binary data such as a translation table.

It is important to note that the ,A mode REQUIRES that the file ALREADY EXISTS on the disk. So before you can use the ,A mode on a new file, you must first create the file with the OPEN statement with a ,W parameter, followed by at least one PRINT# statement, followed by a CLOSE statement.

READY.



THE SPINNER

What evil lurks upon this month's Spinner? This month we have the programs extracted from **Basic BASIC**, all of **PRG**, and the extras...

The extras this month include some very sophisticated programming by such hardcore diehards as Pankey, Jones, and Heath.

There are two special areas on the Spinner this month.

Math in the 90s and *The Terror*.

Math in the 90s

L. L. Pankey brings us **Plane Trig**. **Plane Trig** will calculate sides of different triangles showing graphical representations -- all on the 80 column screen, and you know what that means -- 2 Mhz!

James T. Jones looks at the randomness of random numbers with **Randomness Test**.

Now you can calculate up to 68 decimal points and not see any of this 123 E-10 (your computer's way of printing .0000000123). This program originated as an answer to calculating polynomials and became an entity all its own. **String**

Arithmetic, by Eugene R. Heath will allow your C64 or D1C20 to calculate Pi to 68 decimal places! Show that to you IBM friends!

The Terror

The program **One Dark Night** is back with some vengeance, the sprites have been activated in the C64 version. You'll find around another dark corner a card to our readers, also listed in **PRG--Halloween1879**.



With this issue diehard artist John Green makes his debut with **Slideshow 01.0** that will be showing you some of his art. **Slideshow** will display 10 **Doodles** and 10 **Koalas** from the same disk! So you can use it with your own art.

Stay tuned for more art from Mr. Green.

L. L. Pankey's **64/128 POKEs** will send a handy-dandy chart of some

useful **POKEs** to your printer.

James T. Jones has also given us a PD music program whose driver was written by Jim Butterfield. It is entitled **The Brandenburg**. It was adapted for C64 by Jim Kim with credits to D. Orr. J. S. Bach wrote the original and Mr. Jones added the filigree. This is the only program on this month's Spinner that is

Public Domain. Enjoy!

All of the programs in **PRG** are included on the Spinner also. The Spinner is \$5 and will save you the hassle of typing in the programs from the magazine. Send check or money order payable to diehard to:

SPINNER
P.O. BOX 392
BOISE, ID
83701-0392

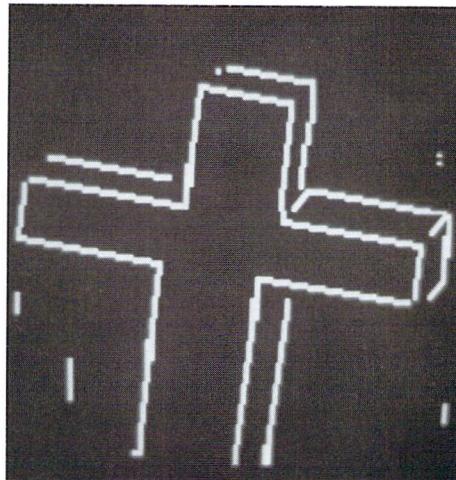


Let's just hope that the bump you hear in the late night hour is the head on your 1541 -- ha ha ha ha ha!!!

PRG

Ever wondered if a long program was loading at all? Well, wonder no more ~~ **Activity RX** to the rescue! **Activity RX**, by James T. Jones, will change the screen's color while your program loads. Once the program is loaded the border will restore back to its original color! Add this to all your long loading programs and wonder no more. You'll be seeing this one incorporated into Spinner programs!

This month we have some more tools, also from Dr. Jones, to add to your dH tool kit. For you hardened MLers out there, we have programs that convert decimal to hexadecimaldecimal, hexadecimaldecimal



to decimal, and decimal to binary.

For tracking those phone numbers there is **Phone Directory Database** by Delbert Stouter. This program will run on any 40 column **commodore** computer!

For fun, there is **Color Montage** by James T. Jones and **Halloween 1879** by Brian L Crosthwaite. The latter is our Hall- oween card to our readers from all of us at dieHard. It will run on

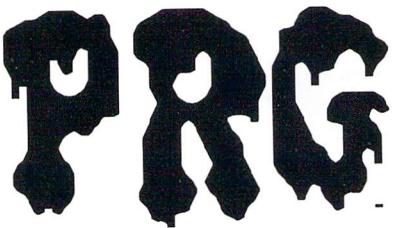
any **commodore**, how- ever, only the VIC20 MOD entitled **HALL- OWEEN.VIC20** will run on the VIC20.

Last month, there was a colossal mess up on the PRG masters. If you had any problems with the type-ins last month you might want to check out **Oops** on page 27.

When typing in the programs there are some things to watch for. When you see something like this, [BLK], it simply means to type <control><1> to get black. [space] means press space. [4 shift space] is 4 shifted spaces. Et cetera and so on...

Happy typing!

~ Brian L Crosthwaite



Computer Activity RX (C64)

 {Oct PAPSAW} 
by James T. Jones

While an operation requiring a long time to carry out is taking place, rather than watching an unchanging screen, I like to know that *something* is happening.

Type the program called **ACTIVITY RX** and save it. Then run it to create on disk a machine language file, **BORDER CHANGE.O**, that uses an interrupt-driven routine to change the border color every second.

For a program requiring long activities, such as sorting a large number of items or reading a large amount of data, load this file at the beginning of your program with lines such as the following:

```
10 DV=PEEK(186):IF DV<8 THEN DV=8
20 IFA=0 THEN A=1
   :LOAD "BORDER CHANGE.O", DV, 1
```

Before and after the activity, place lines with SYS 679 (on) and SYS 691 (off). Then POKE 53280 with the number representing the desired border color number for the remainder of the program.

To load a long program, place a line with SYS 691 at the very beginning of the program. Then write a boot program that first loads **BORDER CHANGE.O** and has a line with SYS 679 before loading your program. An example is given in second listing -- **RX DEMO BOOT**.

ACTIVITY RX

This program creates a machine language color routine that is used by RX DEMO BOOT PRG. Type this in, save it to disk, and then RUN it. It will write a file, BORDER CHANGE.O, to disk.

```
0 REM INTERRUPT-DRIVEN BORDER COLOR
  CHANGE PROGRAM -
  JAMES T. JONES
1 REM COPYRIGHT 1993 LYNNCARTHY
  INDUSTRIES, INC - ALL RIGHTS
  RESERVED
10 C=0:POKE53280,6:POKE53281,6
   :PRINTCHR$(5)CHR$(142)CHR$(8)
15 DV=PEEK(186):IF DV<8 THEN DV=8
```

```
20 FOR I=679 TO 741:READ D:POKE I,D
   :C=C+D:NEXT
30 DATA 173,32,208,141,240,2,238,240
   ,2,76,192,2,120,169,49,160
40 DATA 234,141,20,3,140,21,3,88,96
   ,120,169,205,160,2,141,20
50 DATA 3,140,21,3,88,96,206,230,2
   ,208,17,169,50,141,230,2
60 DATA 174,240,2,173,32,208,141,240
   ,2,142,32,208,76,49,234
70 IF C<>7176 THEN PRINT"ERROR IN DATA
   STATEMENTS":STOP
80 SA=679:EA=741+1:REM THE FOLLOWING
   IS EQUIVALENT TO THE C128
   BSAVE COMMAND
90 H1=INT(SA/256):S1=SA-256*H1
   :H2=INT(EA/256):S2=EA-256*H2
100 SYS 57812" BORDER CHANGE.O", DV:REM
   CREATE BORDER CHANGE.O ON DISK
110 POKE 193,S1:POKE 194,H1:POKE 174
   ,S2:POKE 175,H2:SYS 62954
120 CLOSE 15:OPEN 15,DV,15
   :INPUT#15,E,E$,T,S
   :PRINT#15,"I0":CLOSE 15
130 PRINT CHR$(147):PRINT E,E$,T,S
140 PRINT:PRINT " BORDER CHANGE.O
   HAS BEEN CREATED"
150 PRINT"ON THE DISK. IN YOUR
   PROGRAMS, "
160 PRINT "LOAD THIS ML PROGRAM.
   SYS 679 WILL"
170 PRINT "BEGIN AND SYS 691 WILL
   END BORDER"
180 PRINT "COLOR CHANGES.":END
```

RX DEMO BOOT

This is the loader program that loads the machine language color routine and the RX PRG SHELL programs. The machine language color routine is created by running ACTIVITY RX.

```
0 REM EXAMPLE OF BOOT PROGRAM FOR
  LOADING "RX PGM SHELL"
1 REM COPYRIGHT 1993 LYNNCARTHY
  INDUSTRIES, INC - ALL RIGHTS
  RESERVED
5 REM ACTIVATING BORDER COLOR CHANGE
  PROGRAM - JAMES T. JONES
10 DV=PEEK(186):IF DV<8 THEN DV=8
15 IF A=0 THEN A=1:LOAD"BORDER[SPACE]
   CHANGE.O", DV, 1
20 WH$=CHR$(5):LC$=CHR$(14)
   :DS$=CHR$(8):CD$=CHR$(17)
```

```
:HM$=CHR$(19):CS$=CHR$(147)
30 QU$=CHR$(34):POKE53280,6
   :POKE53281,6:PRINTWH$LC$DS$CS$
40 AU$=" OADING RX PGM SHELL . . . "
50 POKE 214,11:PRINT:PRINTSPC(20-LEN
   (AU$)/2)AU$
60 BG=PEEK(53281):POKE 267,BG:REM THIS
   SAVES THE ORIGINAL BACKGROUND
   (BG) COLOR
70 REM CONTENTS OF LOCATION 267 CANNOT
   BE OVERWRITTEN BY THE
   STACK AND IS
80 REM PRESERVED DURING LOADING OF A
   PROGRAM ON A DISKETTE OR EVEN
   AFTER A RESET
90 POKE 646,BG:REM CHANGE CHARACTER
   COLOR TO BACKGROUND COLOR
100 SYS 679:REM ACTIVATE ROUTINE FOR
   CHANGING BORDER COLOR
110 PRINTHM$CD$CD$CD$"LOAD"QU$
   "RX PGM SHELL"QU$, "DV
   :PRINTCD$CD$CD$CD$"RUN"HM$"
120 POKE 631,13:POKE 632,13
   :POKE 198,2:END
```

RX PROGRAM SHELL

Use this code in the beginning of your own BASIC program to utilize the RX loader program.

```
0 SYS 691:REM THIS TURNS OFF THE
  FLASH- ING BORDER
1 POKE 53281,PEEK(267):REM THIS
  RESTORES ORIGINAL BORDER COLOR
  IN THE BOOT PRG
2 PRINTCHR$(147)CHR$(5)" HIS IS A
  DUMMY PROGRAM USED TO ILLUS-"
3 PRINT"TRATE APPLICATION OF THE
  PROGRAM "
4 PRINTCHR$(34)" BORDER CHANGE.O"
   CHR$(34)" IN LOADING"
5 PRINT"A VERY LONG PROGRAM. "
   :FORT=1TO9000:NEXT
6 PRINT"YOUR PROGRAM BEGINS HERE"
7 REM COPYRIGHT 1993 LYNNCARTHY
  INDUSTRIES, INC - ALL RIGHTS
  RESERVED
```



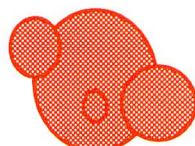
PRG

COLOR MONTAGE (C64)

James T. Jones

For each of the 1000 screen positions with addresses (1024-2023), there is a corresponding address in color RAM, 55296-56295 (or \$D800-\$DBE7 hexadecimal). By changing the contents of color RAM addresses in a random way, interesting screen effects are created. Press the <STOP> key to exit the program.

```
0 REM COLOR MONTAGE 64 -
  JAMES T. JONES
1 REM COPYRIGHT 1993 LYNNCARTHY
  INDUSTRIES, INC - ALL RIGHTS
  RESERVED
10 PRINTCHR$(147):POKE53280,0
  :POKE53281,0:POKE646,1
  :FOR T=1 TO 2000:NEXT
20 FOR I=1024 TO 2023:POKE I,102:NEXT
30 CR=55296:Q=RND(-RND(0)):REM CR IS
  THE BEGINNING OF COLOR RAM
40 RO=INT(RND(0)*925)
  :CN=INT(RND(0)*15)+1
50 POKECR+RO,CN
60 POKECR+RO+INT(RND(1)*26),CN
70 POKECR+RO+INT(RND(1)*51),CN
80 POKECR+RO+INT(RND(1)*76),CN
90 GOTO40
```

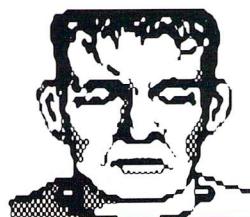


DECIMAL TO HEXADECIMAL CONVERSION PROGRAM (C64)

James T. Jones

This program will convert a list of decimal numbers to hexadecimal numbers. Press the <STOP> key to exit the program.

```
0 REM DECIMAL TO HEXADECIMAL
  CONVERSION 64 - JAMES T. JONES
1 REM COPYRIGHT 1993 LYNNCARTHY
  INDUSTRIES, INC - ALL RIGHTS
  RESERVED
10 DIM OX$(15)
20 FOR I=0 TO 15:READ OX$(I):NEXT
30 DATA 0,1,2,3,4,5,6,7,8,9,A
  ,B,C,D,E,F
40 POKE 53280,6:POKE 53281,6
  :POKE 646,1:PRINTCHR$(147)
  CHR$(142)CHR$(8):PRINT
50 PRINT:PRINT"AFTER INITIAL
  CONVERSION, PRESS SPACE"
60 PRINT"FOR ANOTHER CONVERSION
  OR F1 TO CLEAR"
70 PRINT"SCREEN AND CONTINUE
  CONVERSATIONS."
80 POKE 19,65:REM TO INPUT WITHOUT A
  QUESTION MARK
90 PRINT:INPUT"ENTER DECIMAL
  NUMBER: ";N:PRINT
100 POKE 19,0
110 GOSUB 1000
120 PRINT:PRINT"CORRESPONDING
  HEXADECIMAL NUMBER"
130 PRINT"IS $"+OX$(HI/16)OX$(HIAND15)
  OX$(LO/16)OX$(LOAND15)
140 GETB$:IF B$="" THEN 140
150 IF B$=CHR$(32) THEN 80
160 IF B$=CHR$(133) THEN PRINT
  CHR$(147):GOTO 80
170 GOTO 140
1000 HI=INT(N/256):LO=N-256*HI
1010 RETURN
```



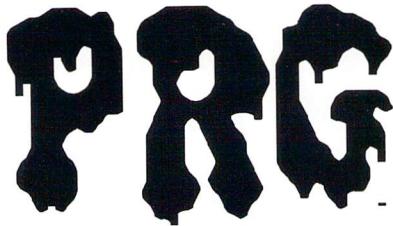
HEXADECIMAL TO DECIMAL CONVERSION PROGRAM (C64)

James T. Jones

Here's a program that will convert a list of hexadecimal numbers to decimal numbers. Press the <STOP> key to exit the program.

```
0 REM HEXADECIMAL TO DECIMAL
  CONVERSION 64 - JAMES T. JONES
1 REM COPYRIGHT 1993 LYNNCARTHY
  INDUSTRIES, INC - ALL RIGHTS
  RESERVED
10 POKE 53280,6:POKE 53281,6
  :POKE 646,1:PRINTCHR$(147)
  CHR$(142)CHR$(8):PRINT
20 PRINT:PRINT"AFTER INITIAL
  CONVERSION, PRESS SPACE"
30 PRINT"FOR ANOTHER CONVERSION
  OR F1 TO CLEAR"
40 PRINT"SCREEN AND CONTINUE
  CONVERSATIONS."
50 POKE 19,65:REM TO INPUT WITHOUT A
  QUESTION MARK
60 PRINT:INPUT"ENTER HEX
  NUMBER: $";A$:PRINT
70 POKE 19,0
80 GOSUB 1000
90 PRINT:PRINT"CORRESPONDING DECIMAL
  NUMBER IS"A
100 GETB$:IF B$="" THEN 100
110 IF B$=CHR$(32) THEN 50
120 IF B$=CHR$(133) THEN
  PRINTCHR$(147):GOTO 50
130 GOTO 100
1000 A=0:FOR I=1 TO LEN(A$)
1010 N=ASC(MID$(A$,LEN(A$)+1-I,1)
  +CHR$(0))-48:N=N+(N>9)*7
  :A=A+N*(16^(I-1))
1020 NEXT I
1030 RETURN
```





DECIMAL TO BINARY CONVERSION PROGRAM (C64)

James T. Jones

There are a number of programs for converting decimal numbers to binary numbers, however, few cover the entire address range (0-65535) of the Commodore 64. The following program will give the binary representation of any binary number in this range. The format for the representation of the binary numbers readily lends itself to converting the numbers to hexadecimal numbers.

The binary representations of decimal numbers is useful in setting (1) or clearing (0) the bits for a particular address. For example, the Status Register is represented by the contents of locations 783 and has seven flags; bit 5 (counting from zero) is not used. If you wish to clear any flag from BASIC, you can clear all of them with POKE 783,0. You must be very careful in setting bits because if the interrupt disable flag (bit 2) is set (1), the interrupt routine for scanning the keyboard will not work, creating a very big problem! To set all bits to 1 except bit 2, use POKE 783,251. Using the program, you can readily verify from the binary representation of 251 that bit 2 is 0.

```

0 REM DECIMAL TO BINARY CONVERSION -
JAMES T. JONES
1 REM COPYRIGHT 1993 LYNN CARTHY
INDUSTRIES, INC - ALL RIGHTS
RESERVED
10 WH$=CHR$(5):YW$=CHR$(158)
:UC$=CHR$(142):DS$=CHR$(8)
:CS$=CHR$(147)
20 CD$=CHR$(17):CY$=CHR$(159)
30 POKE53280,6:POKE53281,6
:PRINT WH$UC$DS$CS$
40 DIM B$(15),B$(15)
50 PRINT YW$"VALUE OF THE DECIMAL
NUMBER IS":INPUT N
60 B$(15)=INT(N/(2^15))
70 B$(14)=INT((N-(2^15)*B$(15))/(2^14))
80 B$(13)=INT((N-(2^15)*B$(15)-(2^14)
*B$(14))/(2^13))
90 B$(12)=INT((N-(2^15)*B$(15)-(2^14)
*B$(14)-(2^13)*B$(13))/(2^12))

```

```

100 B$(11)=INT((N-(2^15)*B$(15)-(2^14)
*B$(14)-B$(13)*(2^13)-B$(12)
*(2^12))/(2^11))
110 A=N-(2^15)*B$(15)-(2^14)*B$(14)
-(2^13)*B$(13)-B$(12)
*(2^12)-B$(11)*(2^11)
120 B$(10)=INT(A/(2^10))
130 B$(9)=INT((A-(2^10)*B$(10))/(2^9))
140 B$(8)=INT((A-(2^10)*B$(10)-(2^9)
*B$(9))/(2^8))
150 B$(7)=INT((A-(2^10)*B$(10)-(2^9)
*B$(9)-B$(8)*(2^8))/(2^7))
160 B$(6)=INT((A-(2^10)*B$(10)-(2^9)
*B$(9)-B$(8)*(2^8)-B$(7)
*(2^7))/(2^6))
170 C=-(2^10)*B$(10)-(2^9)*B$(9)-(2^8)
*B$(8)-(2^7)*B$(7)-B$(6)*(2^6)
180 B$(5)=INT((A+C)/(2^5))
190 B$(4)=INT((A+C-(2^5)*B$(5))/(2^4))
200 B$(3)=INT((A+C-(2^5)*B$(5)-(2^4)
*B$(4))/(2^3))
210 B$(2)=INT((A+C-(2^5)*B$(5)-(2^4)
*B$(4)-B$(3)*(2^3))/(2^2))
220 B$(1)=INT((A+C-(2^5)*B$(5)-(2^4)
*B$(4)-B$(3)*(2^3)-B$(2)
*(2^2))/2)
230 B$(0)=INT((A+C-(2^5)*B$(5)-(2^4)
*B$(4)-B$(3)*(2^3)-B$(2)*(2^2)
-B$(1)*2))
240 PRINTCD$CD$WH$"THE BINARY
REPRESENTATION OF THE DECIMAL
NUMBER";YW$N;WH$"IS"
250 PRINT CY$CD$CD$:GOSUB 2000
260 PRINT B$(15)B$(14)B$(13)B$(12)
B$(11)B$(10)B$(9)B$(8)B$(7)
B$(6)B$(5)B$(4);
270 PRINT:PRINT B$(3)B$(2)B$(1)B$(0)
280 PRINTCD$CD$CD$"PRESS <RETURN> TO
MAKE ANOTHER"
290 PRINT"CONVERSION OR <SPACE>
TO END"
300 GET A$:IF A$="" THEN 300
310 IF A$=CHR$(13) THEN RUN
320 IF A$=CHR$(32) THEN END
330 GOTO 300
2000 FOR I=15 TO 0 STEP -1
:B$(I)=CHR$(21)+STR$(B$(I))
:NEXT:RETURN

```



PHONE DIRECTORY DATABASE (40 col)

Delbert Stouder

Here is a phone directory database for any 40 column **commodore** computer.

```

1 REM COPYRIGHT 1993 LYNN CARTHY IND.
INC. ALL RIGHTS RESERVED
5 PRINT#8CHR$(27);CHR$(69)
10 REM PROGRAM BY D. STOUDER
20 REM PHONE DIRECTORY/40 COL MONITOR
30 REM *THE FALLING LETTERS FILE*
40 DM=100:C=0:P=1
50 DIM LN$(DM),GN$(DM),TP$(DM),FC$(DM)
60 PRINTCHR$(147)
70 M$="*** PHONE DIRECTORY ***"
80 CR=10
90 B=LEN(M$):WA=(40-B)/2-1
:FOR A=1 TO B: M1$=MID$(M$,A,1)
:PRINTCHR$(19)
100 IF M1$<>" " THEN FOR T=1 TO CR-2
:PRINTTAB(WA+A)M1$CHR$(145)
:PRINTTAB(WA+A) "
110 NEXT:PRINTTAB(WA+A)M1$:NEXT
120 PRINT:INPUT" [10 spaces] [2 down]
ENTER DATE(MM/DD/YY)":D$
130 PRINT"[CLR]":PRINTTAB(11) "[RVS ON]
*** DIRECTORY ***[RVS OFF]"
:PRINT
140 PRINT"***** (P1)*****:PRINT
150 PRINTTAB(9)"1.ENTER OR ADD DATA"
160 PRINTTAB(9)"2.SORT DATA"
170 PRINTTAB(9)"3.EDIT,VIEW
CORRECTIONS"
180 PRINTTAB(9)"4.SAVE DATA TO DISK"
190 PRINTTAB(9)"5.LOAD DATA FROM DISK"
200 PRINTTAB(9)"6.VIEW DATA ON SCREEN"
210 PRINTTAB(9)"7.DATA PRINT OUT"
220 PRINTTAB(9)"8.DELETE DATA FROM
FILE":PRINT
230 PRINT"*****:PRINT
240 INPUT"[11 spaces]
ENTER DIRECTORY #";D:GOTO260
250 INPUT D
260 ON D GOTO280,410,590,670,760,850
,1010,1180
270 NEXTI:INPUTX:GOTO130
280 PRINT"[CLR]":REM*ADD OR ENTER DATA
ROUTINE*
290 PRINT"ENTRIES LEFT("DM-I")":PRINT
300 IF DM-I=0 THEN130

```

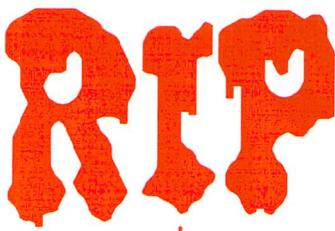
PRG

```

310 PRINT"DATA ENTERED("P1")":PRINT
320 PRINT"ENTER OR ADD
    DATA :" :P1=P1+1:I=P1:PRINT
330 INPUT"NAME(LAST, FIRST)";LN$(I)
    ,GN$(I):PRINT
340 INPUT"TEL.#";TP$(I)
350 FC$(I)=LN$(I)+GN$(I)
360 PRINT
370 INPUT"WANT ANOTHER(Y/N)";A$
380 IF A$="Y"THEN280
390 PRINT"[CLR]":GOTO130
400 GOTO310
410 PRINT"[CLR]":REM*SORT DATA
    ROUTINE*
420 PRINTTAB(16)"[10 down][RVS ON]
    SORTING[RVS OFF]"
430 S=0
440 FORI=2TOP1
450 IF LN$(I)<LN$(I-1)THEN470
460 GOTO540
470 S=1
480 T1$=LN$(I-1):T2$=GN$(I-1)
490 T3$=TP$(I-1):T4$=FC$(I-1)
500 LN$(I-1)=LN$(I):GN$(I-1)=GN$(I)
510 TP$(I-1)=TP$(I):FC$(I-1)=FC$(I)
520 LN$(I)=T1$:GN$(I)=T2$
530 TP$(I)=T3$:FC$(I)=T4$
540 NEXTI
550 IF S=1THEN430
560 PRINT"[CLR]":FORI=1TOP1
570 PRINT TAB(12)LN$(I),"GN$(I)
580 NEXTI:GOTO130
590 PRINT"[CLR]":REM*CHANGE OR EDIT
    DATA ROUTINE*
600 INPUT"NAME(LAST, FIRST)";LN$,GN$
    :PRINT
610 FC$=LN$+GN$
620 FORI=1TOP1
630 IF FC$=FC$(I)THEN650
640 NEXTI:GOTO980
650 PRINT"LAST NAME: "LN$(I)"("GN$(
    I)":GOSUB1350
660 GOTO130
670 PRINT"[CLR]":REM *SAVE DATA TO
    DISK*
680 PRINTTAB(10)"[RVS ON]* SAVE DATA
    TO DISK *[RVS OFF]":PRINT
690 OPEN4,8,4,"@0:NAM/TEL,S,W"
700 PRINT#4,P1
710 FORI=1TOP1
720 PRINT#4,LN$(I):PRINT#4,GN$(I)
730 PRINT#4,TP$(I):PRINT#4,FC$(I)
740 PRINTTAB(12)LN$(I),"GN$(I)
750 NEXT:CLOSE4:GOTO130
760 PRINT"[CLR]":REM *LOAD DATA
    FROM DISK*
770 PRINTTAB(9)"[RVS ON]* LOAD DATA
    FROM DISK *[RVS OFF]":PRINT
780 OPEN4,8,4,"NAM/TEL,S,R"
790 INPUT#4,P1
800 FORI=1TOP1
810 INPUT#4,LN$(I):INPUT#4,GN$(I)
820 INPUT#4,TP$(I):INPUT#4,FC$(I)
830 PRINTTAB(12)LN$(I),"GN$(I)
840 NEXT:CLOSE4:GOTO130
850 PRINT"[CLR]":REM*VIEW ALL RECORDS
    SEQUENTIALLY ROUTINE*
860 GOSUB930
870 FORI=1TOP1:LC=LC+1
880 PRINTTAB(3)LN$(I),"GN$(I)
    ;SPC(2)TP$(I)
890 IF LC=15 THEN GOSUB910
900 NEXT:INPUT"[8 spaces][RVS ON]
    [1 down]END OF DATA PRESS
    RETURN[RVS OFF]";X$:GOTO130
910 INPUT"[6 spaces][1 down][RVS ON]
    ABORT TO DIRECTORY ENTER
    <Y>[RVS OFF]";X$
920 IF X$="Y"THEN130
930 PRINT"[CLR]"
940 PRINT"*****"
    *****
950 PRINTTAB(11)"PHONE DIR
    LISTING":PRINT
960 PRINT"*****"
    *****
970 LC=0:RETURN
980 PRINTTAB(6)"SORRY! THIS NAME NOT
    IN FILE"
990 PRINT
1000 INPUT"[14 spaces][RVS ON]PRESS
    RETURN[RVS OFF]";X$:GOTO130
1010 PRINT"[CLR]":REM*PRINT OUT
    ROUTINE*
1020 PRINTTAB(11)"[RVS ON]* DATA
    PRINT OUT *[RVS OFF]"
1030 PRINT
1040 PRINTTAB(14)"PRINTER ON ?":PRINT
1050 INPUT"[13 spaces][RVS ON]PRESS
    RETURN[RVS OFF]";X$
    :PRINT"[CLR]"
1060 PRINTTAB(11)"[RVS ON]* PHONE
    DIRECTORY *[RVS OFF]":PRINT
1070 OPEN1,4:PRINT#1,CHR$(27);CHR$(69)
1080 PRINT#1,D$SPC(27)"-P-"
1090 PRINT#1
1100 PRINT#1,TAB(25)CHR$(14)"PHONE
    DIRECTORY"CHR$(15)
1110 PRINT#1:C=4
1120 FORI=1TOP1
1130 PRINTTAB(4)LN$(I)",[space]"
    GN$(I);SPC(2)TP$(I)
1140 PRINT#1,SPC(19)ISPC(2)LN$(I)"
    ,GN$(I);SPC(4)TP$(I)
1150 C=C+1
1160 IFC=>56THEN1280
1170 NEXTI:CLOSE1:GOTO130
1180 PRINT"[CLR]":REM*DELETE ROUTINE*
1190 INPUT"NAME(LAST, FIRST)";LN$,GN$
    :DE$=LN$+GN$:P2=P1-1:PRINT
1200 PRINTTAB(8)"[8 down][RVS ON]
    DELETING FROM DATA
    FILE[RVS OFF]"
1210 OPEN4,8,4,"@0:NAM/TEL,S,W"
1220 PRINT#4,P2
1230 FORI=1TOP1
1240 IF DE$=LN$(I)+GN$(I)THEN1270
1250 PRINT#4,LN$(I):PRINT#4,GN$(I)
1260 PRINT#4,TP$(I):PRINT#4,FC$(I)
1270 NEXTI:CLOSE4:GOTO130
1280 P=P+1:PRINT#1:PRINT#1:PRINT#1
    :PRINT#1:PRINT#1:PRINT#1
    :PRINT#1:PRINT#1
1290 PRINT#1:PRINT#1:C=0
1300 PRINT#1,D$TAB(27)"-P-"
1310 PRINT#1
1320 PRINT#1,TAB(26)CHR$(14)"PHONE
    DIRECTORY"CHR$(15)
1330 PRINT#1:C=4
1340 GOTO1170
1350 PRINT"[CLR]":PRINT"*****"
    *** DATA IN FILE *****
    *****
1360 PRINTTAB(2)"1.LAST NAME: "LN$(I)
1370 PRINTTAB(2)"2.FIRST NAME: "GN$(I)
    :FC$(I)=LN$(I)+GN$(I)
1380 PRINTTAB(2)"3.TEL.#: "TP$(I)
1390 PRINTTAB(2)"4.RETURN TO
    DIRECTORY":PRINT
1400 PRINT"*****"
    *****
1410 INPUT"[12 space]CORRECT
    LINE # ";LN:PRINT
1420 ON LN GOTO1430,1440,1450,1460
1430 INPUT" CORRECTION ";LN$(I)
    :GOTO1350
1440 INPUT" CORRECTION ";GN$(I)
    :GOTO1350
1450 INPUT" CORRECTION ";TP$(I)
    :GOTO1350
1460 RETURN
1470 END

```





A Card to Our Readers (All)

Brian L Crosthwaite

Here is a little chiller to let your blood run cold on Halloween night. Be sure to turn off any cartridges or BASIC extensions before you run this one. VIC20 users type in the VIC Listing. The kids will love this one. No pumpkins here! Enjoy...

```
1000 REM COPYRIGHT 1993 LynnCarthy
INDUSTRIES INC. ALL RIGHTS
RESERVED
1060 GOSUB10000:REM ** SETUP **
1070 GOSUB20000:REM ** SCREEN1 **
1080 GOSUB30000:REM ** SOUND1 **
1090 GOSUB40000:REM ** SCREEN2 **
1100 GOSUB30000:REM ** SOUND1 **
1110 GOSUB50000:REM ** SCREEN3 **
1120 GOSUB30000:REM ** SOUND1 **
1130 GOSUB60000:REM ** SCREEN4 **
1140 GOSUB30000:REM ** SOUND1 **
1170 GOTO 1070
3000 REM ** CLEAR SOUND ROUTINE **
3010 SO=54272:FORJ=SOTOSO+24
:POKEJ,0:NEXT
3020 RETURN
3028 REM ** 64/128 THUNDER **
3030 POKESO+5,38:POKESO+6,238:REM ADSR
3040 POKESO+24,15 :REM V*L
3050 POKESO+1,4:POKESO,76 :REM HFLF
3060 POKESO+15,42 :REM HF2
3070 POKESO+4,129 :REM WFN
3080 FORZ=1TO150:NEXT :REM DEL
3090 POKESO+4,128 :REM WF
3100 RETURN
4000 REM ** +4/16 THUNDER **
4010 VOL8:SOUND3,12,0:SOUND3,12,65535
4999 RETURN
9999 END
10000 REM ***** WHAT COMPUTER *****
10006 CO=PEEK(772)+256*PEEK(773)
:FL=2001:TH=11
10010 IFCO=50556THENFL=20:SC=36879
10020 IFCO=42364THENFL=64
10030 IFCO=35158THENFL=+4/16:TH=65
10040 IFCO=17165THENFL=128
:IFRGR(0)=5THEGRAPHICO
10050 IFFL=64ORFL=128THENBC=53280
:SC=53281:CC=646:GOSUB3000
10070 IFFL=2001THENPRINT" [CLR] ":"PRINT"
[shift space]:IFPEEK(SA+40)<>96
THENSP$=[20 space]"
10080 IFFL=+4/16THENSC=65301
:BC=65305:CC=1364
```

```
10090 IFFL<>20THENSP$=" ":"PRINT" [CLR] "
:RETURN
10110 IFFL=20THENPOKESC,8
:PRINT"LOAD"+CHR$(34)+"
HALLOWEEN.VIC"+CHR$(34)+" ,8"
10120 POKE631,19:POKE632,13:POKE633,82
:POKE634,117:POKE635,13
:POKE198,5:NEW
10130 END
10150 RETURN
10999 END
20000 REM ***SCREEN1***
20010 POKESC,0:POKEBC,0:POKECC,1
20020 FORL=0TO7:PRINT:NEXT
20050 PRINTSP$" [4 space][shift Q]
20060 PRINTSP$" [17 space][BLK]
HAPPY HALLOWEEN!
20070 PRINTSP$"
20080 PRINTSP$" [18 space]FROM DIEHARD!
20090 FORL=0TO4:PRINT:NEXT
20140 PRINTSP$" [shift E][shift D]
[shift C][shift F][shift C]
[shift F][shift R][shift F]
[shift C][shift D][shift C]
[shift D][shift E][shift D]
[shift C][shift F][shift C]
[shift F][shift R][C= P][C= @]
20150 PRINTSP$" [C= T][C= Y][shift E]
[shift D][shift E][shift D]
[shift C][shift F][shift R]
[shift F][shift R][shift F]
[shift C][shift D][shift C]
[shift D][shift E][shift D]
[shift C][shift F]
20160 PRINTSP$" [28 space][C= A][C= S]
20170 PRINTSP$" [3 space][shift U]
[shift I][2 space][shift U]
[shift I][2 space][shift U]
[shift I][2 space][shift U]
[shift I][2 space][shift U]
[shift I][5 space][C= A][C= X]
[C= Z][C= S]
20180 PRINTSP$" [3 space][shift -]
[shift -][2 space][shift -]
[shift -][2 space][shift -]
[shift -][2 space][shift -]
[shift -][2 space][shift -]
[shift -][5 space][C= Z]
[C= S][C= A][C= X]
20190 PRINTSP$" [28 space][shift -]
[shift -]
20200 PRINTSP$" [28 space][shift -]
[shift -][C= G]"
:PRINT:PRINT:PRINT
20899 RETURN
20999 END
30000 REM ***SOUND1***
30010 DD=INT(RND(0)*1999)+999
:FORI=OTODD:NEXT:NS=INT(RND(0)
*3)+1:DL=INT(RND(0)*1999)+999
30020 FORL=0TONS:POKESC,TH
30030 IFFL=64ORFL=128THENGOSUB3028
30040 IFFL=+4/16THENGOSUB4000
30050 POKESC,0
30060 IFFL=+4/16THENFORV=8TO0STEP-1
:VOLV:FORDP=0TO200:NEXT:NEXT
30070 FORTD=0TODL:NEXT:NEXT
30899 RETURN
30999 END
40000 REM ***SCREEN2***
40020 PRINTSP$" [18 space].[shift F]
[shift R][C= P][C= @]
40030 PRINTSP$" [17 space][C= A]
[shift F][shift R][C= P]
[C= Y][C= T][C= H]
40040 PRINTSP$" [17 space][shift G]
[3 space][C= T][shift P]
[space][C= H]
40050 PRINTSP$" [17 space][shift T]
[4 space][shift Y][C= N]
40060 PRINTSP$" [9 space][C= P][C= @]
[6 space][C= H][4 space]
[2 shift H][7 space]:
40070 PRINTSP$" [8 space][C= P][C= @]
[C= Y][C= T][shift E][shift D]
[shift C][shift F][C= M][C= G]
[4 space][2 shift B]
40080 PRINTSP$" [7 space][shift Y]
[space][C= T][C= Y][shift E]
[shift D][shift C][shift F]
[shift R][shift @][5 space]
[shift G][shift N][C= Y]
[shift E][shift D][shift C]
[shift F][shift R][C= P][C= @]
40090 PRINTSP$" [7 space][shift H]
[14 space][C= Z][shift F]
[shift R][C= P][C= @][4 space]
[shift N][C= H][5space].
40100 PRINTSP$" [7 space][C= Z]
[shift F][shift R][C= P][C= @]
[14 space][C= T][C= Y][shift E]
[shift D][C= S][C= G][C= M]
40110 PRINTSP$" [10 space][C= T][C= Y]
[shift E][shift D][C= S][14 space]
[shift G][C= N]
40120 PRINTSP$" [15 space][shift G]
[5 space][shift O][shift E]
[shift D][shift C][shift F]
[shift R][C= P][C= @][space]
```

PRG

```

[shift T][shift N]
40130 PRINT$P$"[7 space][shift B]
[7 space][shift T][4 space]
[C= M][C= G][C= N][5 space]
[C= T][C= Y][7 space][shift B]
40140 PRINT$P$"[15 space][C= G][4
space]
[C= N][space][shift Y]
40150 PRINT$P$"[14 space][C= M][C= G]
[4 space][shift Y][space]
[shift H]
40160 PRINT$P$"[11 space][shift B]
[3 space][C= N][5 space]
[shift H][space][shift B]
40170 PRINT$P$"[11 space][shift B]
[3 space][shift Y][5 space]
[shift B][space][shift G]
40180 PRINT$P$"[14 space][shift H]
[5 space][shift G][space][shift T]
[9 space][shift G][5 space]
[shift -]
40190 PRINT$P$"[14 space][shift B]
[5 space][shift T][space][C= G]
[15 space][shift B]
40200 PRINT$P$"[14 space][C= X]
[5 space][C= G][C= M][C= G]
40899 RETURN
40999 END
50000 REM ***SCREEN3***
50010 FOR I=0 TO 5:PRINT:NEXT
50070 PRINT$P$"[11 space][C= D][RVS
ON]
[15 space][RVS OFF][C= F]
50080 PRINT$P$"[10 space][C= D][RVS
ON]
[17 space][RVS OFF][C= F]
50090 PRINT$P$"[10 space][RVS ON]
[19 space][RVS OFF]
50100 PRINT$P$"[10 space][RVS ON]
[19 space][RVS OFF]
50110 PRINT$P$"[10 space][RVS ON]
[19 space][RVS OFF]
50120 PRINT$P$"[10 space][RVS ON]
[2 space][RVS OFF][15 space]
[RVS ON][2 space][RVS OFF]
50130 PRINT$P$"[3 space]1642-1879
[3 space][RVS ON][2 space]
[RVS OFF][15 space][RVS ON]
[2 space][RVS OFF]
50140 PRINT$P$"[10 space][RVS ON]
[2 space][RVS OFF][15 space]
[RVS ON][2 space][RVS OFF]
50150 [5 space]R I P[5 space][RVS ON]
[2 space][RVS OFF][15 space]
[RVS ON][2 space][RVS OFF]

```

```

50160 PRINT[10 space][RVS ON][2 space]
[RVS OFF][15 space][RVS ON]
[2 space][RVS OFF]
50170 FORI=0TO7:PRINT$P$"[10 space]
[RVS ON][19 space][RVS OFF]":NEXT
50899 RETURN
50999 END
60000 REM ***SCREEN4***
60010 PRINT"[HOME]":FOR I=0 TO 4
:PRINT:NEXT
60070 PRINT$P$"[11 space][C= D]
[RVS ON][15 space][RVS OFF][C= F]
60080 PRINT$P$"[10 space][C= D][RVS
ON]
[17 space][RVS OFF][C= F]
60090 PRINT$P$"[10 space][RVS ON]
[19 space][RVS OFF]
60100 PRINT$P$"[10 space][RVS ON]
[19 space][RVS OFF]
60110 PRINT$P$"[10 space][RVS ON]
[19 space][RVS OFF]
60120 PRINT$P$"[10 space][RVS ON]
[2 space][RVS OFF][15 space]
[RVS ON][2 space][RVS OFF]
60130 PRINT$P$"[10 space][RVS ON]
[6 space][RVS OFF][C= V][space]
[C= C][RVS ON][3 space][RVS OFF]
[C= V][space][C= C][RVS ON]
[6 space][RVS OFF]
60140 PRINT$P$"[10 space][RVS ON]
[6 space][RVS OFF][3 space]
[RVS ON][3 space][RVS OFF]
[3 space][RVS ON][6 space]
[RVS OFF]
60150 PRINT$P$"[10 space][RVS ON]
[6 space][RVS OFF][C= F][space]
[C= D][RVS ON][3 space][RVS OFF]
[C= F][space][C= D][RVS ON]
[6 space][RVS OFF]
60160[10 space][RVS ON][2 space]
[RVS OFF][15 space][RVS ON]
[2 space][RVS OFF]
60170 FORI=0TO3:PRINT$P$"[10 space]
[RVS ON][19 space]
[RVS OFF]":NEXT
60180 PRINT$P$"[10 space][RVS ON]
[8 space]BOO![7 space][RVS OFF]
60190 FORI=0TO2:PRINT$P$"[10 space]
[RVS ON][19 space][RVS OFF]":NEXT
60899 RETURN
60999 END

```

VIC20 Listing

```

1000 REM HALLOWEEN.VIC20
1040 REM COPYRIGHT 1993 LYNNCARTHY INC
INC. ALL RIGHTS RESERVED
1120 POKE36879,8:PRINT"[CLR]
1130 PRINT:PRINT"[space] [shift Q]
1150 PRINT:PRINT"[5 space].
[BLK]HAPPY HALLOWEEN!
1170 PRINT"[6 space]FROM DIEHARD![WHT]
1180 PRINT:PRINT:PRINT"
1210 PRINT"[shift E][shift D][shift C]
[shift D][shift E][shift D]
[shift C][shift *][shift F]
[shift R][C=T]
1220 PRINT"[11 space][C= @][shift E]
[C= @][shift E][shift D][shift C]
[shift *][shift F][shift F]
[shift R][shift R]
1230 PRINT:PRINT:PRINT
1260 PRINT"[space][shift U][shift I]
[2 sapce][shift U][shift I]
[4 space][shift U][shift I]
1270 PRINT"[space][2 shift -][2 space]
[2 shift -][2 space][2 shift -]
1280 PRINT"[space][2 shift -]
[2 space][2 shift -][2 space]
[2 shift -][3 space][C= Z][C= S]
[C= A][C= X]
1290 PRINT"[15 space][2 shift -]
1300 PRINT"[15 space][2 shift -]
1310 PRINT"[15 space][2 shift -]
1320 PRINT:PRINT
2000 F=INT(RND(0)*255)+1
2010 POKE36879,25
2020 POKE36878,15
2030 POKE36877,179
2032 FORT=0TOF:NEXT
2040 POKE36879,8
2050 FORV=15TO0STEP-1:POKE36878,V
:FORT=0TOF:NEXT:NEXT
2060 FORT=0TOF*3:NEXT:GOTO2000

```



—Oops -- or @#\$%&!--

Last month's issue had some mega booboo's in the listings of PRG. The print on the third column on every page of PRG had tried to over step the width of the column. This is due to the fact that the graphical representation of the LW_Barrows font is smaller in width than the actual PostScript counterpart. Sorry about this, but as Al Hale once said, "Stuff Happens."

—READ ADDRESS (C64)—

```
190 PRINT CD$CD$CD$"GET START AND END ADDRESSES FOR"
340 IF ER<>63 THEN GOSUB 400:GOTO 360
420 FORJ=1TO10:POKE54296,15:FORK=1TO5:NEXTK:POKE54296,0
:FORK=1TO5:NEXTK:NEXTJ
```

—MAXI DISK SLEEVE (C128)—

```
350 PRINTSPC(17)"PERFORATION 1/2 INCH ABOVE THE PRINT
HEAD MASK."
430 OPEN1,8,15:OPEN2,8,2,"#":T=18:S=0
480 GOSUB1080:REM-DELETE THIS LINE IF YOU HAVE A
COMMODORE DEDICATED PRINTER
560 GOSUB1080:REM-DELETE THIS LINE IF YOU HAVE A
COMMODORE DEDICATED PRINTER
600 F=F+1:BK$=STR$(ASC(MID$(A$,31,1))
+ASC(MID$(A$,32,1))*256)
620 PRINTLEFT$(F$(F),26):J=J+1:IFJ=3THENJ=0:PRINT:GOTO630
```

—MARQUE MADNESS (C128)—

```
100 REM--YOU PROGRAM CONTINUES HERE
LINE 60000's line number should be 60010
60080 C=J+8:FOX=23TO1STEP-1:COLOR5,C:CHAR,0,X,A$:C=C+1
60130 NEXTX:PRINT""[2 home]";:POKE248,0:RETURN
60160 SYSTS,16,12:SYSTS,0,13:SYSTS,24,20:SYSTS,0,21
:POKETB,16:POKETA,24:RETURN
```

—NO SMOKING (C128)—

```
310 DRAW1,217,173 TO 297,180 TO 310,200
370 CHAR1,5,1,"SMOKING IS BAD FOR YOUR HEALTH":SLEEP2
```

READY.

Trader's Corner

Got something to trade? Need something? Try here. Maybe one of our readers has just what you're looking for. Or perhaps they want what you have. Trader's Corner is free to subscribers looking to trade or buy. All TCs will be listed for three months. Write to **dieHard**, Trader's Corner, P. O. Box 392, Boise, ID, 83701. Inquiries require the number after the name.

Wanted: **Transactor** Magazines, **Commander** Magazines. Cartridges for Plus/4, C16, VIC20. CBM 4040. SuperPET docs & disks. BLC #000000.

Wanted: 1. The **Omicron Conspiracy** by Epex. 2. **Purple Saturn Day** by Epex. I have over 400 programs that I will trade for, or I will buy the two games listed above. Craig Shepley #002042.

Wanted: Two Plus/4 computers. Mr. Oran Sands #001801.

Wanted: I am interested in obtaining a copy of Len Lyons book "Using the Commodore 64," published by Addison-Wesley of Reading, Mass. Bob Grunwald #002547.

Wanted: **Speedscript64** most recent version. **Phone List** additions automatically alphabetized. Donald H. Webber #001188.

Wanted: Original **Compute!**, **RUN**, **Ahoy**, & **Transactor** disks. Pre-volume 5 **Transactor** mags. R. Scot Derr #0000B.

Wanted: I'm looking for a CMD128D to purchase as a spare. John W. Crockett #001210.

To Trade: Working Cardco Write Now Cartridges, with manuals. Cecil M. Howard, #000574.

Wanted: I am looking for two out-of-print books from ABACUS Software: "C-128 Internals" and "BASIC 7.0 Internals." Paul S. Highland, #000425.

Wanted: **Electronics Projects for your Commodore 64 and 128** by John Lovine. Paperback or Hardcover. Jack Miller, #001725.

Wanted: A program for recording and tracking stocks in a portfolio, that is user friendly. Marcus Krejci, #C000137.

Wanted: DEAD OR ALIVE (working or not) Xetec Super Graphix Gold Printer Interfaces. Ronald L. Hanson, #003356.

Wanted: The program Sylvia Porter 64 with documentation and works. Richard W. Herbert #001855.



Odysseus had been kidnapped and placed under a spell by an evil and powerful wizard. In order to save Odysseus, Circe was transformed into Pegasus, the flying horse!

THE WINGS OF CIRCE is a new action/adventure game for the Commodore 64. The game features bitmapped graphics and animated storytelling. Battle dragons, Hawkmen, and skeletons as you attempt to rescue Odysseus from his powerful captor! Learn the secrets of Pegasus and Medusa! This is action and storytelling at its best!

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Your Paper

by Douglas Parsons

At last, you have finished your computer task, reach over to your printer and begin to remove the paper....

PAPER.... a word derived from the Egyptian papyrus, a reed plant they used to make writing materials. Paper has had a long and varied journey to the present day.

Using processes of separating vegetable fibers in water developed in China around 150 BC, Ts'ai Lun (Cai Lun), a eunuch official in the Emperor's court, is credited for inventing paper in 105 A.D. using mulberry bark fibers. He later used rags, hemp and old fishing nets in further experimentation to make better paper.

Around 750 A.D. near the city of Samarkand, Arabs captured Chinese papermakers who were forced to teach the closely guarded secret art of papermaking to the Moors. The Crusades and the Moorish conquest of North Africa and Spain spread the papermaking art to Europe in the 12th century. The first papermill in the United States was established in Germantown (now part of Philadelphia, PA) in 1690.

Wood fibers have evolved as the major source of paper making fibers in North America over cotton, hemp, jute and wheat and rice straws. Paper is manufactured in a series of mechanical operations on machines capable of making a continuous sheet up to 70 feet wide at rates up to 5,000 feet per minute. Paper used to have different characteristics on each side but newer developed machines now make both sides the same. Nearly 80 million tons of paper material was produced in the United States in 1990 of which almost 7% was uncoated free sheet Bond used in offices on computers, copy machines, forms, envelopes and offset printing.

All of these uses require the thin, .004" thick (thousandths), bond paper which is often watermarked, has good brightness and with sizing to accept inks. Bond papers are sized with one or more additives such as rosin, alum or starches placed into the pulp vat from which the paper is made for the purpose of preventing

inks from spreading into the paper. Ordinary sulfite bond paper made from wood fibers is characterized by a degree of stiffness, durability for repeat handling and filing, resistance to the penetration and spreading of inks, its bright color and cleanliness. It contains 5% moisture to prevent brittleness.

Bond paper got its name because it was originally used to print stocks and bonds and is now most common in business offices. These papers are classified as either 16 lb. or 20 lb. Their "weight" is derived from the basis weight of a "ream" of 17 inch X 22 inch sheets being 16 or 20 pounds. Reams were originally comprised of 480 sheets but now consist of 500 sheets. Four of the standard 8 1/2 X 11 inch sheets for typing, copying and computing paper are cut from the parent 17 X 22 inch sheets.

Paper coated with starch and clay and polished is especially good for magazines and books as well as the newer laser and ink jet computer printers. Bond papers come in many shades of "white" depending upon the clays, titanium or other chemicals used to coat them. The whiter the sheet the better the ink reflectivity and contrast. Clay coated papers (slick paper) have the advantage of greater smoothness than uncoated although it is more limp due to its lower bulk. This paper has better opacity due to pigmented coatings and smoother paper formation.

Paper in computing is very important as the end result of our computing efforts are often printed out for transfer or storage. Computer paper is cut into 9 1/2 inch rolls at the mills and sold to a converter company. This company cuts the perforations so the 9 1/2 inch sheet will tear at the standard 8 1/2 X 11 inch sheet size and also punches the tractor feed holes. The larger holes adjacent to the top and bottom perforations are to accommodate file binders.

The edges of the paper containing the tractor feed holes are torn off at the perforations located 1/2 inch in from the outer edges. Perforations are also located exactly every 11 inches along the length of the roll. These perforations allow the easy folding for storage and shipping to the user. The folded sheets are stored in various size boxes which hold 500, 1000 or 2500 sheets.

A 8 1/2 X 11 inch sheet is divided into a

matrix of horizontal lines and vertical columns. After tearing off the outer edges and tearing off at the page end you have a 8 1/2 X 11 inch sheet of paper. Now, one of the most common type sizes (Pica) is 10 characters to the inch (cpi), also called 12 point. Ten cpi X 8 inches = 80 columns per sheet. Most computers default to this 80 column standard which leaves 1/4 inch borders down each side of the paper. Another common standard of 12 point type is 1/6 of a inch from the bottom of one font to the bottom of the font on the next line or six lines to the inch. Computer printers default to this standard making 66 lines per 11 inch sheet. Using 80 columns X 66 lines you can put 5280 characters on a sheet. (5280 feet = 1 mile). Printing machines can print to the edge and bottom of 80 column paper but sometime ink smears over and behind the edge.

Knowing how the paper measurements are derived will help you to use these tools and make paper more useful. Manipulating the four margins (top, bottom, left and right) to place your output in the desired position on the paper is the task of your computer, word processing program, printer interface and finally your printer. These devices can be set for many other line spacings and column widths through the use of internal macros, toggles, programs and fonts.

Paper, that used to be so rare and guarded, is now one of our most widely used and common items. You know all this as you look at your computing results displayed on....PAPER.

READY.



TIPS

In the August issue, the tip concerning RELative files was *supposed* to be: Don't validate any disk with RANDOM files since the directory does not track these. Autoboot sectors can also be lost.

If you are lucky enough to have a copy of Bruce Boyles' "CRIBBAGE 128", which was a type-in program published in COMPUTE!'S GAZETTE August 1988, then you may want to modify it to run in 80 column mode on your C128. The program was written to run in C128 40 column mode, but runs much faster in 80 column FAST mode. Just add line 15 as shown below:

```
15 SCNCLR : IF RGR(0)=5 THEN
  FAST :WINDOW19,0,59,24 :
  COLOR6,2 : GOTO 30
```

Now that the program runs faster, you may want to provide a longer look at the screen after "CUT FOR DEAL" and card count after each hand has been played. Just add lines 165 and 585 as shown:

```
165 CHAR1,10,23:PRINT" [CTRL 7]
  [CTRL 9] [3 SPACES] HIT A KEY
  [3 SPACES] " :POKE208,0:
  GETKEYA$"
585 CHAR1,10,23:PRINT" [CTRL 7]
  [CTRL 9] [3 SPACES] HIT A KEY
  [3 SPACES] " :POKE208,0:
  GETKEYA$"
```

-- Larry Pankey of Fallbrook, California

Last year, I acquired a copy of Kurt Tappe's "MAH JONGG V2.0" from a local user club. It's a super program, but after loading it a number of times, I have discovered a few bugs.

The first involves the program getting trapped in the "THAT TILE DOESN'T MATCH THE FIRST" routine, with no way out other than re-running the program. This happens when you click on one tile to highlight it, then click on the "MOVES" bar without un-highlighting the first tile. Now, when you click on "CANCEL", you become trapped. The fix is to insert the variable H1=0 into the tile search routine. Just add this line:

```
955 H1=0
```

Note: you can use a period in place of the zero.

The next bug is not as serious, but makes the highlighted tiles look bad. It only happens when the first thing you do is click on the "MOVES" bar before you select any tiles. The program will highlight the matched tiles in their default colors. To correct this, turn SPRITE3 and SPRITE4 off with a color early in the program. Just add this line:

```
315 SPRITE3,0,TH:SPRITE4,0,TH
```

The third is not really a bug, but will affect the highlighted tiles if you have changed the value of the variable TH in line 40. This variable determines the highlighted tile color that you click

on. If you have changed this value, then delete the color command in line 1150. It is redundant and need not be used. If you then wish to print the "NEXT" and "CANCEL" prompt boxes in white, change the color command in line 1090 to:

COLORW,D

Here is an additional suggestion to keep you from having a visual "lock-up" if you accidentally hit the RUN/STOP key. Change line 1760 into line 1761. Then add this line:

```
1760 IF ER=30 THEN RESUME
```

Try making these changes to your program to make sure they are correct before scratching the original program. Then save the new MAH.JONGG. -- Larry Pankey of Fallbrook, California

Here's a little tip for C64 SpeedScript fans. Contrary to what the documentation says, it's easy "to stop an out-of-control (global) search and replace" (CTRL-G). All you do is hit RESTORE. This freezes everything in its tracks. Then hit any character key - except Y- to clear the command line, then CLR/HOME to put the cursor top left, or any character key to send it all the way home. -- Richard van Frank of Montclair, New Jersey.

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